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MEMORANDUM

TO: John Sanders Ph.D., Chief
Environmental Monitoring Branch
Department of Pesticide Regulation

FROM: George Lew, Chief
Engineering and Certification Branch
Monitoring and Laboratory Division

DATE: April 2, 2002

SUBJECT: FINAL REPORT FOR THE 2000 BENOMYL AIR MONITORING

Attached is the final, "Report for the Application and Ambient Air Monitoring for Benomyl." Also attached is the separate volume of appendices for the report. We received your comments (May 25, 2001, Sanders to Lew) on the draft report (March 26, 2001, Lew to Sanders) and have made a number of corrections and changes you recommended.

If you or your staff have questions or need further information, please contact me at 327-0900, or Oscar Lopez at 323-1161.

Attachment/Separate Appendices

cc: Randy Segawa, DPR (w/Attachment/Appendices)
Lynn Baker, SSD (w/Attachment/Appendices)
Sharon Lee, DHS (w/Attachment/ Appendices)
George Alexeeff, Ph.D., OEHHA (w/Attachment)
Jerry Prieto, Fresno County Agricultural Commissioner (w/Attachment)
Michael Tanner, Merced County Agricultural Commissioner (w/Attachment)
Robert Rolan, Madera County Agricultural Commissioner (w/Attachment)
David L. Crow, San Joaquin Valley APCD (w/Attachment)

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Website: http://www.arb.ca.gov.

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Air Resources Board

Report for the Application
And Ambient Air Monitoring
For Benomyl

Testing Section
Engineering and Certification Branch
Monitoring and Laboratory Division

Project No. C99-108 (Ambient and Application)

Date: April 2, 2002

Approved:

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This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Summary

Report for the Application
And Ambient Air Monitoring for Benomyl

This report presents the results of application and ambient air monitoring for benomyl and its breakdown products, carbendazim and n-butyl isocyanate (BIC). Application monitoring was conducted in Fresno County around the use of benomyl as a fungicide on 81 acres of almonds from February 24 to 29, 2000. Ambient monitoring was conducted to coincide with the use of benomyl on almonds, grapes and stone fruits in Merced, Madera, and Fresno Counties from January 31 to March 10, 2000. Tables 4 and 7 present the results of application air monitoring for benomyl and BIC, respectively. Table 10 presents the results of ambient air monitoring for benomyl and BIC. Summaries of the application and ambient results are presented in Tables 5, 8 and 11. The application sample results have also been summarized and associated with sampling period wind roses in Figures 6 through 16. Laboratory results, in units of nano gram per sample (ng/sample), equal to or above the estimated quantitation limit (EQL) of 170 ng/sample for benomyl and 301 ng/sample for BIC are reported to 3 significant figures. Results equal to or above the method detection limit (MDL) of 34.0 ng/sample for benomyl and 60.2 ng/sample for BIC but below the EQL are reported as detected (DET). Air concentration results (in units of nano gram per cubic meter (ng/m^3) and parts per trillion by volume (pptv)) are reported to 2 significant figures. The air concentration, expressed in units of ng/m^3 (or pptv), associated with the EQL is dependent on the volume of air sampled, which varies from sample to sample. For a 24-hour sampling period at 2.5 Liters per minute (Lpm) the air concentration would be $4.7x10^1$ ng/m^3 ($0.4x10^1$ pptv) for benomyl and for a 24-hour sampling period at 30 cubic centimeters per minute (ccpm) the air concentration would be $7.0x10^3$ ng/m^3 ($1.7x10^3$ pptv) for BIC as associated with the EQL's. Air sampling was conducted simultaneously for benomyl and BIC. Benomyl and carbendazim results are reported together as total benomyl, i.e., the two compounds cannot be determined separately by the sampling/analytical methods. Benomyl was collected in a XAD-2 cartridge at 2.5 Lpm and BIC was collected in a XAD-2 cartridge at 30 ccpm.

APPLICATION STUDY

For benomyl, all four of the application background samples had results less than MDL. Of the eighty application samples collected (spikes, blanks, background and the lower of the collocated samples excluded) six were found to be above the EQL, three sample results were detected and seventy-one sample results were <MDL. The highest concentration of $3.8x10^2$ ng/m^3 (32 pptv) was observed at the collocated north-sampling site (CN2D3) during the 3rd sampling period.

For n-butyl isocyanate, all four of the application background samples had results less

than MDL. Of the eighty application samples collected (spikes, blanks, background and the lower of the collocated samples excluded) none were found to be above the EQL, five sample results were detected and seventy-five sample results were <MDL. The highest concentrations are the detected samples and were observed at the north and south sampling sites during the 7th sampling period and at the north sampling site during the 9th sampling period.

AMBIENT STUDY

For benomyl, of the one-hundred-twenty ambient samples collected (spikes, blanks and the lower of collocated samples excluded), eight were found to be above the EQL, five were found to have results of "detected", one-hundred-six were below the MDL and the remaining sample (PLA9) was invalidated due to a broken resin tube. The highest benomyl concentration, 1.2×10^2 ng/m^3 (10 pptv), was observed at Schelby Elementary School (SCH1) on January 31, 2000. **However, all eight samples above the EQL were found to be false positives by Liquid Chromatography/Mass Spectrometry (LC/MS) confirmation analyses**.

For n-butyl isocyanate, of the one-hundred-twenty ambient samples collected (spikes, blanks and the lower of collocated samples excluded), none were found to be above the EQL, none were found to have results of "detected", one-hundred-nineteen were below the MDL and the remaining sample (SCH22) was invalidated due to laboratory error.

CONFIRMATION ANALYSES

All samples with results above the EQL were submitted to the California Department of Food and Agriculture (CDFA) laboratory for confirmation analyses by LC/MS. The ambient results were suspected to be "false positives" due to the presence of an analytical interference with a slightly longer (7 seconds) chromatographic retention time. The ambient results above the EQL were shown to be false positives. The application study results above the EQL were shown to be true positives. The confirmation analyses results are listed in Table 25.

Acknowledgments

ARB Staff collected the ambient and application samples. Assistance was provided by the Fresno County Agricultural Commissioner's Office. Jim Omand and Terry Houston of the Special Analysis Section Laboratory performed method development and chemical analyses. Neil Adler of the Testing Section prepared the sampling trains.

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Report for the Application
And Ambient Air Monitoring for
Benomyl

I. Introduction

At the request of the California Department of Pesticide Regulation (DPR) (November 1, 1999 Memorandum, Helliker to Lloyd and November 23, 1999 Memorandum, Segawa to Castronovo), the Air Resources Board (ARB) staff determined airborne concentrations of the pesticide benomyl and its breakdown products carbendazim and n-butyl isocyanate (BIC). Benomyl and carbendazim cannot be distinguished by the monitoring method and are reported as total benomyl. For the remainder of this report, reference to "benomyl monitoring results" will represent the sum of benomyl and carbendazim. Application monitoring was conducted in Fresno County around the use of benomyl as a fungicide on 81 acres of almonds from February 24 to 29, 2000. Ambient monitoring was conducted to coincide with the use of benomyl on almonds, grapes and stone fruits in Merced, Madera, and Fresno Counties from January 31 to March 10, 2000. This monitoring was done to fulfill the requirements of AB 1807/3219 (Food and Agricultural Code, Division 7, Chapter 3, Article 1.5) which requires the ARB "to document the level of airborne emissions.... of pesticides which may be determined to pose a present or potential hazard..." when requested by DPR. The ARB Special Analysis Section Laboratory conducted the method development and sample analyses. ARB Testing Section staff conducted site selection for the application and ambient studies and sample collection for the application studies. ARB Air Quality Surveillance Branch staff conducted sample collection for the ambient study.

The protocol for the application and ambient air monitoring is enclosed separately as Appendix I (page 54 through 94 of a separate volume of appendices to this report).

The laboratory report, "Benomyl Method Development and Benomyl Analytical Results for Ambient Monitoring and Application Samples", is enclosed separately as Appendix II (page 95 through 117 of the separate volume of appendices to this report). The laboratory report, "n-Butyl Isocyanate Method Development and n-Butyl Isocyanate Analytical Results for Ambient Monitoring and Application Samples", is enclosed separately as Appendix III (page 126 through 145 of the separate volume of appendices to this report). The sampling/analysis Standard Operating Procedures (SOP) are also enclosed in Appendix II and III (page 118 through 125 and 146 through 153, respectively, of the separate volume of appendices to this report).

The DPR's November 23, 1999 memorandum, "Use Information and Air Monitoring Recommendation for the Pesticide Active Ingredient Benomyl" is enclosed separately as Appendix IV (page 154 of the separate volume of appendices to this report) and the "Pesticide Use Recommendation" from Helena Chemical Company is enclosed as Appendix V (page 171 of the separate volume of appendices to this report).

The ambient and application field log sheets are enclosed separately as Appendices VI (page 173), VII (page 184), VIII (page 194) and IX (page 200).

The benomyl and n-butyl isocyanate application meteorological monitoring results are enclosed separately as Appendix X (pages 206-214).

II. Sampling

A sketch of the sampling apparatus is shown in Figure 5. Samples were collected by passing a measured volume of ambient air through XAD-2 resin. Benomyl and n-butyl isocyanate were sampled and analyzed from separate resin tubes. The XAD-2 resin tubes were obtained from SKC (#226-30-06). Rotameters were used to control sample flow rates. The rotameters were adjusted to the correct flow, 2.5 liters per minute (lpm)[1] for benomyl and 30 cubic centimeters per minute (ccpm)[2] for BIC, before each sampling period and checked at the end of each sampling period using calibrated digital mass flow meters. The sampling system operated continuously with the exact operating interval noted. Samplers were leak checked before each sampling period with the sampling cartridges installed. Any change in the flow rates was recorded in the field log sheets (see appendices VI through IX). The resin tubes were protected from direct sunlight and supported about 1.5 meters above the ground (or roof) during the sampling period. At the end of each sampling period the tubes were capped and placed in culture tubes with an identification label affixed. The field log sheets were used to record start and stop times, sample identifications, start and stop flow rates and any other significant comments. Subsequent to sampling, the samples were shipped or transported on dry ice, as soon as reasonably possible, to the Special Analysis Section Laboratory in Sacramento. The samples were then stored in the freezer until extraction and analysis. A chain of custody sheet accompanied all samples.

A. Application Monitoring

The DPR's monitoring recommendation for benomyl suggested that application-site air monitoring should be conducted in Merced, Madera, Fresno or Kern Counties, during the same months as the ambient study, in association with benomyl use on almonds or grapes at the highest rates of use; i.e., about 6.0 pounds per acre. The DPR recommendation may be incorrect though, as ARB staff found that growers normally apply only up to 1 pound per acre for almonds, and 1-2 pounds per acre for grapes. This application monitoring was conducted during an application of 0.5 pounds per acre to almonds. Very few growers were using benomyl and 0.5 pounds/acre was the highest application rate available at that time. It seems that most growers had switched to a different chemical and this resulted in fewer growers using benomyl.

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1 In standard units (i.e., not corrected to actual conditions)

2 Flow rate units of ccpm are equivalent to mlpm (milliliters per minute) and are in standard units (i.e., not corrected to actual conditions).

An 81-acre almond field in Fresno County (composed of two adjacent plots) was chosen for the application monitoring site. Refer to Figures 2, 3 and 4 for diagrams of the application site. Refer to Appendix V (page 171) for a copy of the pesticide use recommendation.

Information collected regarding the application included: 1) the orientation of the field with respect to North (identified as geographic north), 2) an accurate record of the positions of the monitoring equipment with respect to the field, including the distance each monitor is positioned away from the edge of the field and an accurate drawing of the monitoring site showing the precise location of the monitoring equipment and any wind obstacles with respect to the field, 3) the field size, 4) the application rate, 5) formulation and 6) method and length of application. Details regarding the site and application are summarized below in Table 1.

Table 1
Application Information

Range/Township/Section:	R17E/T14S/S4 – SE1/4 of SE1/4, S3 – SW1/4 of SW1/4
Product Applied:	Benlate SP (50% benomyl A.I. by weight) Captan (48.9% A.I. by weight)
Type of Application:	Ground (tractor) blower spray
Application Rate:	1 lb. product in 100 gallons water per acre for Benlate SP (0.5 lbs. benomyl A.I. per acre) 6 lbs. Product in 100 gallons water per acre for Captan (2.93 lbs. captan A.I. per acre)
Grower/Applicator:	Mike Wilson

A three day monitoring period was recommended in the DPR's November 23, 1999 memorandum with intended sampling times as follows: (where the first sample is started at the start of application) during application, followed by a 1-hour sample, a 2-hour sample, a 3-hour sample (or up to 1 hour before sunset), a 6-hour sample (or up to 1 hour before sunset), overnight (until 1 hour after sunrise), daytime (until 1 hour before sunset), overnight (until 1 hour after sunrise) and 24 hour (until 1 hour after sunrise).

Background samples were taken at each position as shown in Figure 2 to establish if any benomyl was detectable in the air before the application (i.e., from nearby applications). The background samples were collected from 1635 to 0805, February 24 to 25, 2000 (15 1/2 hours). The application was conducted over two days. Referring to Figures 3 and 4 the sampler setup was different for each day of application due to miscommunication between the grower and the ARB staff. The grower had initially indicated that only the plot on the west side of Trinity Avenue would receive application of benomyl and so the monitors for background sampling and the "1st Application" were set up only around this field. However, the application continued to the plot on the east

side of Trinity Avenue on the first day and was completed on the 2nd application day. The first application started at 0805 and ended at 1805 on February 25, 2000. The samplers were moved to appropriate positions around both plots at the end of the 1st application. The blower spray application was conducted by tractor and started in the southeast corner of the 46 acre lot with east/west passes and ended in the west middle side of the 36 acre lot (see Figure 3). The second application started at 0625 and ended at 1105 on February 26, 2000. The second application began at the location where the first application ended (see Figure 4). Table 2 lists the approximate sampling periods.

Table 2
Application Sampling Periods

Period	Approx. # Hours	Date	Time
Background	15 1/2 hours	2/24/00 - 2/25/00	1635 to 0805
1 (1st application)	10 hours	2/25/00 - 2/25/00	0805 to 1825
2 (overnight)	12 1/2 hours	2/25/00 - 2/26/00	1825 to 0700
3 (2nd application)	4 1/2 hours	2/26/00 - 2/26/00	0700 to 1030
4	1 hour	2/26/00 - 2/26/00	1030 to 1130
5	2 hours	2/26/00 - 2/26/00	1130 to 1330
6	3 1/4 hours	2/26/00 - 2/26/00	1330 to 1645
7 (overnight)	14 3/4 hours	2/26/00 - 2/27/00	1645 to 0735
8	9 1/2 hours	2/27/00 - 2/27/00	0735 to 1650
9 (overnight)	14 1/2 hours	2/27/00 - 2/28/00	1650 to 0730
10	24 hours	2/28/00 - 2/29/00	0730 to 0735

For the first application eight samplers were positioned, one on each side of the "west" field and on each corner. A ninth sampler was collocated at the east position. The south samplers were positioned approximately 65 feet from the field, all the north samplers were approximately 20 feet away, the west sampler was 38 feet and the east sampler was 52 feet from the field. For the second sampling period (1st overnight) eight samplers were re-positioned to surround the entire 82 acre lot, one on each corner and two each on the south and north side. A ninth sampler was collocated at the northeast side (N2). Both southeast samplers were approximately 25 feet from the field, the two southwest samplers were 65 feet away and the north samplers were approximately 20 feet away from the field. All the samplers were approximately at the same elevation relative to the field.

The meteorological station (oriented toward geographic north) was positioned at the west side of the field. The meteorological station was set up to determine wind speed and direction, air temperature, barometric pressure and relative humidity. The raw meteorological station data is available on a 1.44 MB diskette (comma delimited text

format). Appendix X lists the meteorological station data in 15-minute averages for the test period. ARB staff noted the degree of cloud cover on the sample log sheet whenever sample cartridges were changed. The sky conditions were overcast to partly cloudy during the study period.

B. Ambient Monitoring

Ambient monitoring was conducted to coincide with the use of benomyl on almonds and grapes in Merced, Madera and Fresno Counties from January 31 to March 10, 2000. Five sampling sites were selected by ARB personnel from the areas of Merced, Madera and Fresno Counties where almonds and grape farming occurs and in populated areas or in areas frequented by people. Sites were selected with considerations for both accessibility and security of the sampling equipment. Urban background samples were collected at the ARB air monitoring station in downtown Fresno. The five sites are presented in Figure 1 and are listed in Table 3. Figure 1 shows the sampling sites relative to benomyl use in the area in 1998. Twenty-four hour (approximately) samples were taken Monday through Friday (40 samples/week) at a flow rate of 2.5 Lpm for benomyl and 30 ccpm for BIC. Twenty-four discreet sampling days were monitored at each site for a total of 120 samples (plus 30 collocated samples, 12 trip blanks and 10 quality assurance spikes) were collected.

Table 3
Ambient Sampling Sites

SCH	Schelby Elementary School 6738 N. Sultana Livingston, CA 95334 Range/Township/Section: R12E/T6S/S29 – W1/2 of NW1/4		(209) 358-0408 Richard Kleitman Coordinator, Special Education
PLA	Plainsburg Elementary School 3708 South Plainsburg Road Merced, CA 95340 Range/Township/Section: R15E/T8S/S15 – W1/2 of SW1/4		(209) 389-4707 James Tesone Superintendent
HOW	Howard Elementary School 13878 Road 21 1/2 Madera, CA 93637 Range/Township/Section: R17E/T11S/S30 – NE1/4 of NW1/4		(559) 674-5868 Dr. Julia O'Kane Superintendent
RIV	Riverview Elementary School 8662 S. Lac Jac Avenue Parlier, CA 93648 Range/Township/Section: R23E/T15S/S21 – NW1/4 of SW1/4		(559) 637-1210 Ext:213 Dr. Rod Frese Asst. Superintendent

ARB	ARB Air Monitoring Station 3425 N First, Suite 205B Fresno, CA 93726-6819 Range/Township/Section: R20E/T13S/S22 – SE1/4 of SE1/4	(559) 228-1825 Dave Wilkerson

The Schelby Elementary School is in the small city of Livingston on the east side of Hwy 99. There were almond orchards to the west at a distance of 150 yards, north at 80 yards, east at 100 yards and southeast at 250 yards. There were grapes directly south about 200 yards. The sampling unit was placed on the roof on one of the school buildings on the east side. The sampling cartridges were positioned approximately 15 feet above the ground.

The Plainsburg Elementary School is in the small town of Plainsburg on the east side of Hwy 99. There were almond orchards to the north approximately 30 yards and east approximately 200 yards. The sampling unit was placed on the roof of the school auditorium, which was located on the north side of the school. The sampling cartridge was positioned approximately 24 feet off the ground. The sampler was positioned 12 feet from a secondary rooftop that was 6 feet higher on the south side of the auditorium.

The Howard Elementary School is located in the small city of Madera on the west side of Hwy 99. There were almond orchards directly north, northwest and northeast approximately 85 yards from the school. The sampling unit was placed on the rooftop of the school's kitchen, which was attached to the cafeteria, located on the north side of the school (the cafeteria roof was 5 feet higher than the kitchen's roof). The sampling cartridge was positioned approximately 11 feet from the ground and 12 feet away from the cafeteria's roof.

The Riverview Elementary School is located on the west side of Reedley and just east of Hwy 99. There were possible peach orchards 90 yards west and almond orchards approximately 200 yards northwest. There was a warehouse and tall trees directly north approximately 50 yards. The sampling unit was placed on the ground inside a fenced area. There was an electrical circuit unit behind the sampler approximately 5 feet away and a pump house west of the sampler approximately 30 feet. The sampling cartridge was positioned 5 feet from the ground.

The background monitoring was conducted at the ARB air monitoring site in a residential/business area in Fresno. The sampler was placed on a second-story roof near other monitoring equipment at a height of approximately 30 feet. The sampling cartridges were positioned approximately 5 feet above the roof. Thus, air was sampled through the cartridges at a height of approximately 35 feet.

III. Analytical Methodology

The SOP for sampling and analysis of benomyl is enclosed in Appendix II (page 118). The procedures specify that the exposed XAD-2 sorbent tubes are stored in an ice chest on dry ice or in a freezer until desorbed with 4 ml of acentonitrile. After sonication the extracts are held at room temperature for a minimum of 8 hours prior to analysis to allow the conversion of benomyl to its breakdown product carbendazim. The injection volume is 100 μL. The High Performance Liquid Chromatography (HPLC) method employs an isocratic mobile phase and a silica C18 bonded stationary phase with ultraviolet spectrometric detection at 280 nm. Results are reported as total benomyl and represent the sum of the benomyl and carbendazim collected in the air samples.

The SOP for sampling and analysis of n-butyl isocyanate is enclosed in Appendix III (page 146). The procedures specify that the exposed XAD-2 resin tubes are stored in an ice chest on dry ice or in a freezer until extracted with 3 ml of dichloromethane (DCM) and placed in a sonicator. A gas chromatograph with a DB-5MS capillary column and a quadrapole mass spectrometer (MS) is used for analysis. The MS detector is operated in selected ion monitoring mode.

IV. Application and Ambient Results

Tables 4 and 7 present the results of application monitoring for benomyl and BIC, respectively. Summaries of the application results are presented in Tables 5 and 8 respectively. The benomyl and BIC ambient monitoring results are presented in Table 10 and are summarized in Table 11.

For benomyl, the Special Analysis Section Laboratory determined the analytical MDL as 3.14 x s (from 40 CFR 136, Appendix B); where s is the standard deviation calculated for the results of seven replicate standard injections (near the estimated detection limit). The MDL was 34.0 ng/sample. The estimated quantitation limit (EQL), calculated as 5 times the MDL, was 170 ng/sample. For n-butyl isocyanate, the Special Analysis Section Laboratory determined the analytical MDL as 3.14 x s; where s is the standard deviation calculated for the results of seven replicate resin spikes (near the estimated detection limit). The MDL was 60.2 ng/sample and the EQL was 301 ng/sample. Results equal to or above the MDL but below the EQL are reported as detected (DET). Laboratory results, in units of ng/sample, equal to or above the EQL are reported to 3 significant figures. Air concentration results (in units of ng/m^3 and pptv) are reported to 2 significant figures. The air concentration, expressed in units of ng/m^3 (or pptv), associated with the EQL is dependent on the volume of air sampled, which varies from sample to sample. For a 24-hour sampling period at 2.50 Lpm the air concentration would be 4.7×10^1 ng/m^3 (0.4×10^1 pptv) for benomyl and for a 24-hour sampling period at 30 ccpm the air concentration would be 7.0×10^3 ng/m^3 (1.7×10^3 pptv) for BIC as associated with the EQL's.

The equation used to convert benomyl air concentration from units of ng/m^3 to pptv units at 1 atmosphere and 25 °C is shown below.

$$\text{pptv} = (\text{ng/m}^3) \times \frac{(0.0820575 \text{ liter-atm/mole-°K})(298\text{°K})}{(1 \text{ atm})(290.3 \text{ gram/mole})} = (0.08423 \text{ nL/ng}) \times (\text{ng/m}^3)$$

The equation used to convert BIC air concentration from units of ng/m^3 to pptv units at 1 atmosphere and 25 °C is shown below.

$$\text{pptv} = (\text{ng/m}^3) \times \frac{(0.0820575 \text{ liter-atm/mole-°K})(298\text{°K})}{(1 \text{ atm})(99.15 \text{ gram/mole})} = (0.24663 \text{ nL/ng}) \times (\text{ng/m}^3)$$

A. Benomyl Application Monitoring Results

The benomyl application sample results have also been summarized as associated with sampling period wind roses in Figures 6 through 16. The spokes of the wind roses correspond to the compass direction of origin of the wind. The segments of each spoke correspond to incremental increases in wind speed (knots), as illustrated by the legends. The length of the spoke (and each segment) corresponds to the portion of the sampling time that the wind was from that direction (at that speed).

All four of the application background samples had results less than MDL. Of the eighty application samples collected (spikes, blanks, background and the lower of the collocated samples excluded) six were found to be above the EQL, three sample results were detected and seventy-one sample results were <MDL. The highest concentration, 3.8×10^2 ng/m^3 (32 pptv), was observed at the collocated north-sampling site (CN2D3) during the 3rd sampling period.

B. n-Butyl Isocyanate Application Monitoring Results

The n-butyl isocyanate application sample results have also been summarized as associated with sampling period wind roses in Figures 4 through 14. The spokes of the wind roses correspond to the compass direction of origin of the wind. The segments of each spoke correspond to incremental increases in wind speed (knots), as illustrated by the legends. The length of the spoke (and each segment) corresponds to the portion of the sampling time that the wind was from that direction (at that speed).

All four of the application background samples had results less than MDL. Of the eighty application samples collected (spikes, blanks, background and the lower of the collocated samples excluded) none were found to be above the EQL, five sample results were detected and seventy-five sample results were <MDL. The highest concentrations are the detected samples and were observed at the north and south sampling sites during the 7th sampling period and at the north sampling site during the 9th period.

C. Ambient Monitoring Results

For benomyl, of the one-hundred-twenty ambient samples collected (spikes, blanks and the lower of collocated samples excluded), eight were found to be above the EQL, five were found to have results of "detected", one-hundred-six were below the MDL and the remaining sample (PLA9) was invalidated due to broken resin tube. The highest benomyl concentration, 1.2×10^2 ng/m^3 (10 pptv), was observed at Schelby Elementary School (SCH1) on January 31, 2000. However, all sample results above the EQL were shown to be false positives by LC/MS confirmation analyses (see Section IV.D.).

For n-butyl isocyanate, of the one-hundred-twenty ambient samples collected (spikes, blanks and the lower of collocated samples excluded), none were found to be above the EQL, none were found to have results of "detected", one-hundred-nineteen were below the MDL and the remaining sample (SCH22) was invalidated due to laboratory error.

D. Confirmation Analyses

All samples with results above the EQL were submitted to the California Department of Food and Agriculture (CDFA) laboratory for confirmation analyses by LC/MS. The ambient results were suspected to be "false positives" due to the presence of an analytical interference with a slightly longer (7 seconds) chromatographic retention time. The ARB and CDFA results are listed in Table 25. All ambient samples analyzed by CDFA were below their reporting limit of 30 ng/ml. Thus, the ambient results reported above the EQL were confirmed to be false positives. The application samples analyzed showed good agreement between both methods except one. Thus, the application study results confirmed by LC/MS analyses are true positives.

Seven negative (<MDL) samples were sent to CDFA for confirmation. All seven negative samples, positive as reported by the ARB instrument, were negative when subjected to statistical analysis of the retention time. The LC/MS confirmation found all seven samples to be below the CDFA reporting limit. These negative results indicate that false negatives are not a problem with the ARB results.

V. Quality Assurance

Field quality control (QC) for the application monitoring included the following:

1) Ten field spikes (same environmental and experimental conditions as those occurring at the time of ambient sampling). The field spikes were obtained by sampling ambient air at the background monitoring site for 15 1/2-hour periods at 2.5 Lpm and 30 ccpm for benomyl and BIC, respectively (i.e., collocated with a background sample). Three sample

cartridges were spiked at 2xEQL and three at 10xEQL for benomyl. Four sample cartridges were spiked at 2xEQL for BIC.

2) Ten trip spikes prepared at the same levels as the field spikes, (Six trip spikes for benomyl and four for BIC).

3) Ten lab spikes prepared at the same level as the field and trip spikes, (Six lab spikes for benomyl and four for BIC).

4) Collocated (replicate) samples were collected at one of the eight sampling sites (N2) for all sampling periods.

5) Two Trip blanks were obtained during sampling, one each for benomyl and BIC.

Field QC for the ambient monitoring included the following:

1) Ten field spikes (same environmental and experimental conditions as those occurring at the time of ambient sampling). The field spikes were obtained by sampling ambient air at the urban background monitoring site for 24 hour periods at 2.5 Lpm and 30 ccpm for benomyl and BIC, respectively (i.e., collocated with a background sample). Three sample cartridges were spiked at 2xEQL and three at 10xEQL for benomyl. Four sample cartridges were spiked at 2xEQL for BIC.

2) Ten trip spikes prepared at the same level as the field spikes. Six trip spikes for benomyl and four for BIC.

3) Ten lab spikes prepared at the same level as the field and trip spikes. Six lab spikes for benomyl and four for BIC.

4) Collocated (replicate) samples were taken for six dates at each sampling location.

5) Twelve Trip blanks were obtained, six each for benomyl and BIC.

Rotameters were used to control the sampling flow rate. The flow rates were set at the start of every sampling period (every sample) using a calibrated digital mass flow meter (battery operated). The flow rates were also checked and recorded at the end of each sampling period using the mass flow meter. The ARB Standards Laboratory calibrated the mass flow meters.

VI. Quality Assurance Results

A. Method Development

Refer to Appendix II and III (pages 95 and 126, respectively) for discussion and results of method development studies. The freezer storage stability study results show that benomyl is stable for at least 8 weeks and BIC is stable for at least 6 weeks. For benomyl, all ambient and application samples were analyzed within 28 days of receipt. For BIC, all ambient samples were analyzed within 7 days of receipt and all application samples were analyzed within 22 days of receipt.

B. Trip Blanks

The application trip blanks (1 for benomyl and 2 for BIC) and the 12 ambient trip blanks all had results of <MDL for benomyl and BIC. The trip blank #134 was not analyzed for BIC because the tube broke during preparation for analysis.

C. Application Background Sample Results

All eight (four each for benomyl and BIC) of the application background samples had results less than MDL for benomyl and BIC.

D. Collocated Sample Results

Referring to Table 6, none of the collocated pairs of samples for the benomyl application study had both results above the EQL. Six pairs had results <MDL, two pairs had results with one sample each above the EQL and the other <MDL, one pair had one sample <MDL the other a "detected", and the last pair had one sample above EQL and a "detected".

Referring to Table 9, none of the collocated pairs of samples for the BIC application study had both results above the EQL. Eight pairs had results <MDL, one pair had both results "detected" and the last pair had one sample with a "detected" and the other <MDL.

Referring to Table 12, three of the benomyl ambient collocated pairs had both results above the EQL (confirmed as false positives) and three pairs had one sample with a "detected" and the other <MDL. All the other benomyl pairs were <MDL. None of the BIC ambient collocated pairs had both results above the EQL.

E. Laboratory, Trip and Field Spikes

Laboratory, trip and field spikes are normally all prepared at the same time and at the same level, (benomyl used two levels for this study). The spikes are prepared in replicate sets of six (6) for benomyl and four (4) for BIC. The laboratory spikes are

placed immediately in a freezer and kept there until extraction and analysis. The trip spikes are kept in a freezer until transported to the field. The trip spike samples are kept on dry ice in an ice chest (the same one used for samples) during transport to and from the field and at all times while in the field except for trip spike sample log-in and labeling. The field spikes are kept in a freezer until transported to the field. The field spike samples are kept on dry ice in an ice chest (the same one used for samples and trip spikes) during transport to and from the field and at all times while in the field except for the sampling period. Field spikes were collected at the same environmental and experimental conditions as those occurring at the time of ambient sampling. The field spikes were obtained by sampling ambient air through the previously spiked cartridges and are collocated with an ambient sample. The extraction and analysis of laboratory, trip and field spikes normally occurs at the same time. Laboratory, trip and field spikes for the application and ambient studies were prepared by Special Analysis Section staff.

1) Benomyl

a) Laboratory Spikes: The laboratory spike results for the application and ambient studies are listed in Tables 13 and 16, respectively. Three of the spike cartridges were spiked with 250 ng of benomyl and three were spiked with 2000 ng of benomyl. The average recovery for the application lab spikes was 69%. The average recovery for the ambient lab spikes was 83%.

b) Trip Spikes: The trip spike results for the application and ambient studies are listed in Tables 14 and 17, respectively. Three of the spike cartridges were spiked with 250 ng of benomyl and three were spiked with 2000 ng of benomyl. The average recoveries for the application trip spikes were 75% and for the ambient trip spikes was 86%. These results are consistent with the lab spike results and indicate that the sample transport, storage and analytical procedures used in this study produce acceptable results for benomyl.

c) Field Spikes: The field spike results for the application and ambient studies are listed in Tables 15 and 18, respectively. Three of the spike cartridges were spiked with 250 ng of benomyl and three were spiked with 2000 ng of benomyl. The average recovery for the application field spikes was 83% and for the ambient field spikes was 110%. The results are consistent with the lab and trip spike results and indicate that the sampling, sample transport, storage and analytical procedures used in this study produce acceptable results for benomyl.

2) n-Butyl Isocyanate

a) Laboratory Spikes: The laboratory spike results for the application and ambient studies are listed in Tables 19 and 22, respectively. Each of the spike cartridges was spiked with 200 ng of BIC. The average recovery for the application lab spikes was 59%. The average recovery for the ambient lab spikes was 70%.

b) Trip Spikes: The trip spike results for the application and ambient studies are listed in Tables 20 and 23, respectively. Each of the spike cartridges was spiked with 200 ng of BIC. The average recoveries for the application trip spikes were 54% and for the ambient trip spikes was 71%. These results are consistent with the lab spike results and indicate that the sample transport, storage and analytical procedures used in this study produce acceptable results for BIC.

c) Field Spikes: The field spike results for the application and ambient studies are listed in Tables 21 and 24, respectively. Each of the spike cartridges was spiked with 200 ng of BIC. The average recovery for the application field spikes was 53% and for the ambient field spikes was 85%. The ambient results are consistent with the lab and trip spike results and indicates that the sampling, sample transport, storage and analytical procedures used in this study produce acceptable results for BIC.

FIGURE 1
Benomyl Ambient Monitoring Area
(use map provided by DPR)

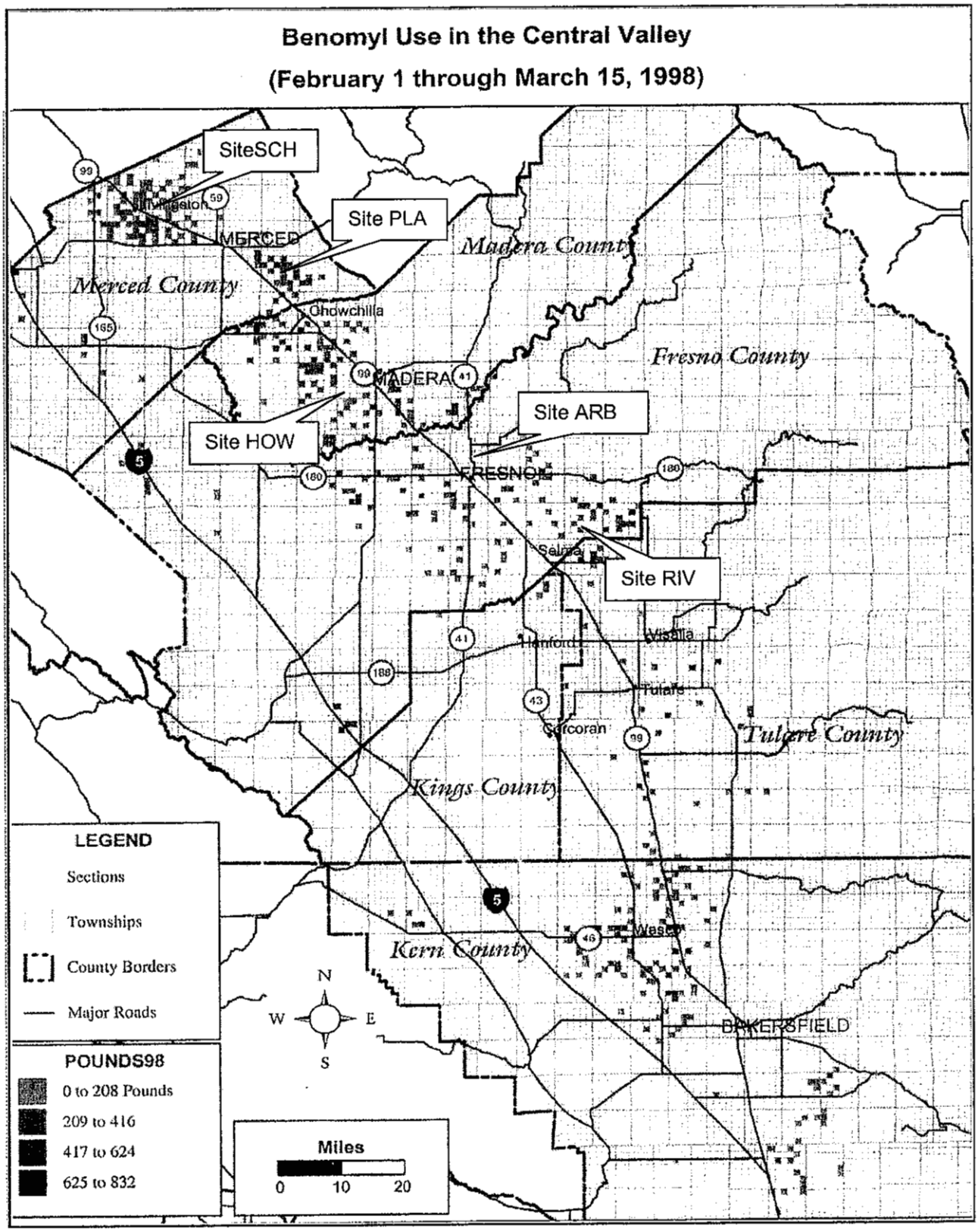


FIGURE 2
Background Application Sampler Setup

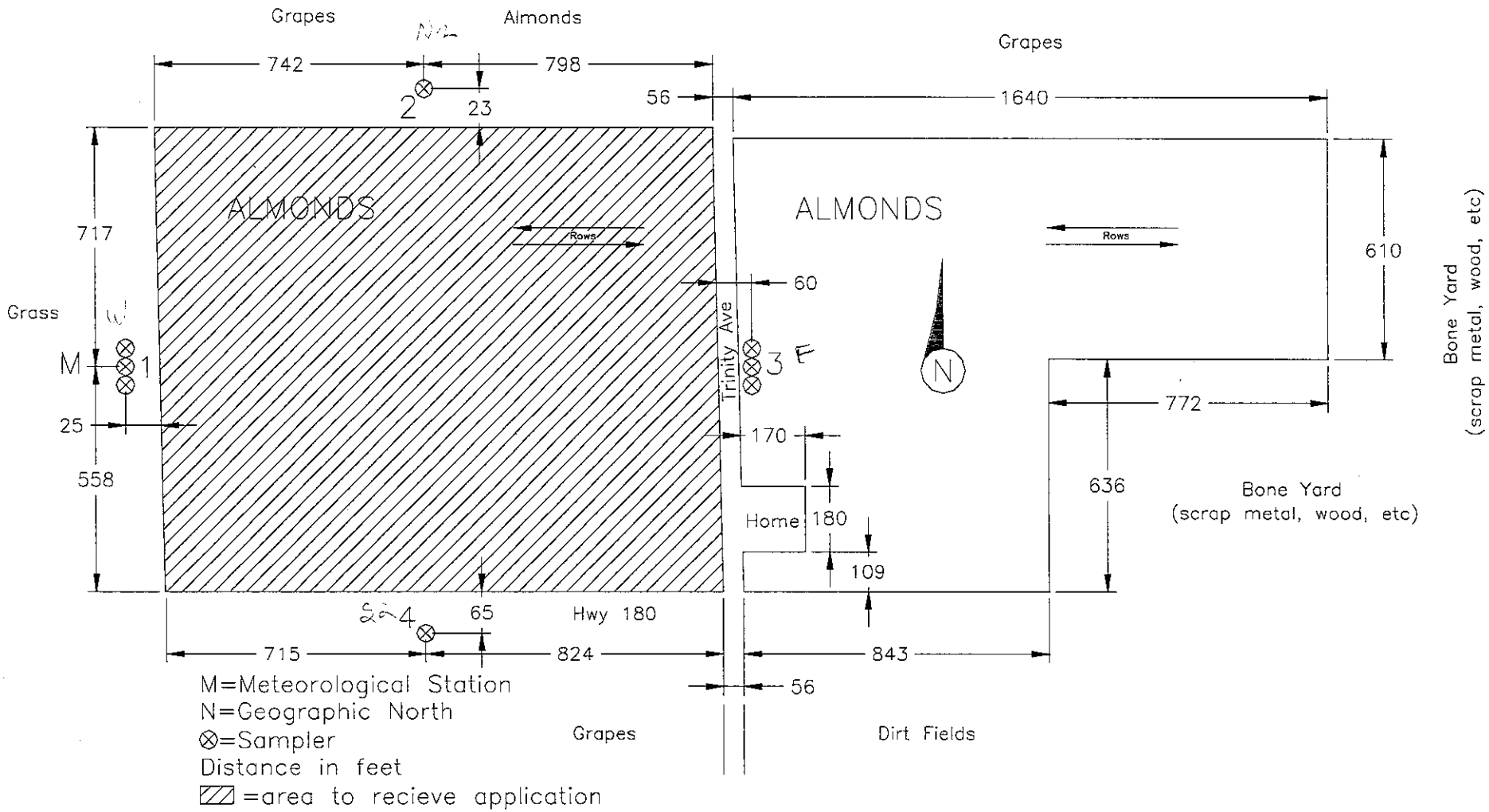


FIGURE 3
1ST Application Sampler Setup

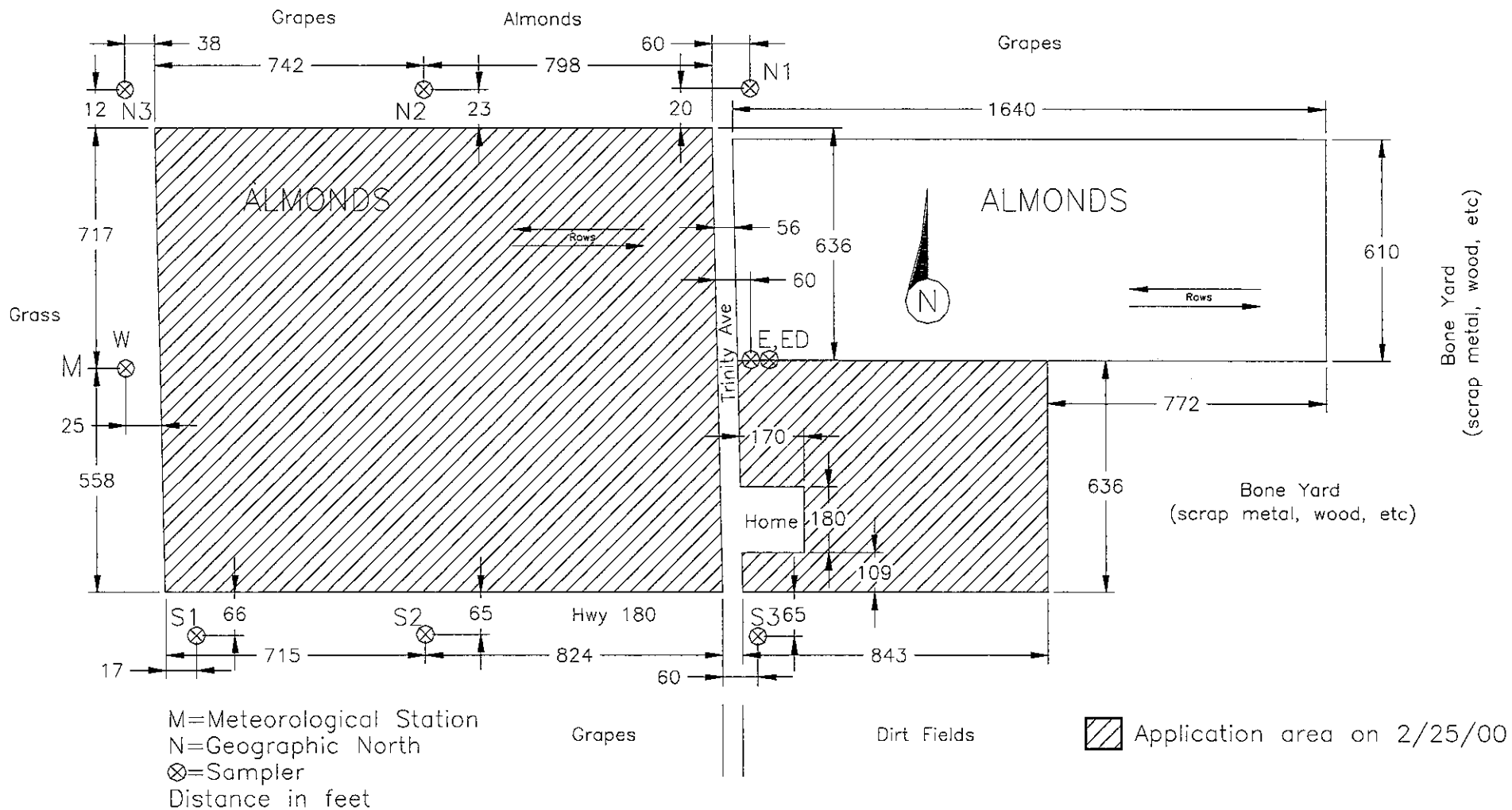
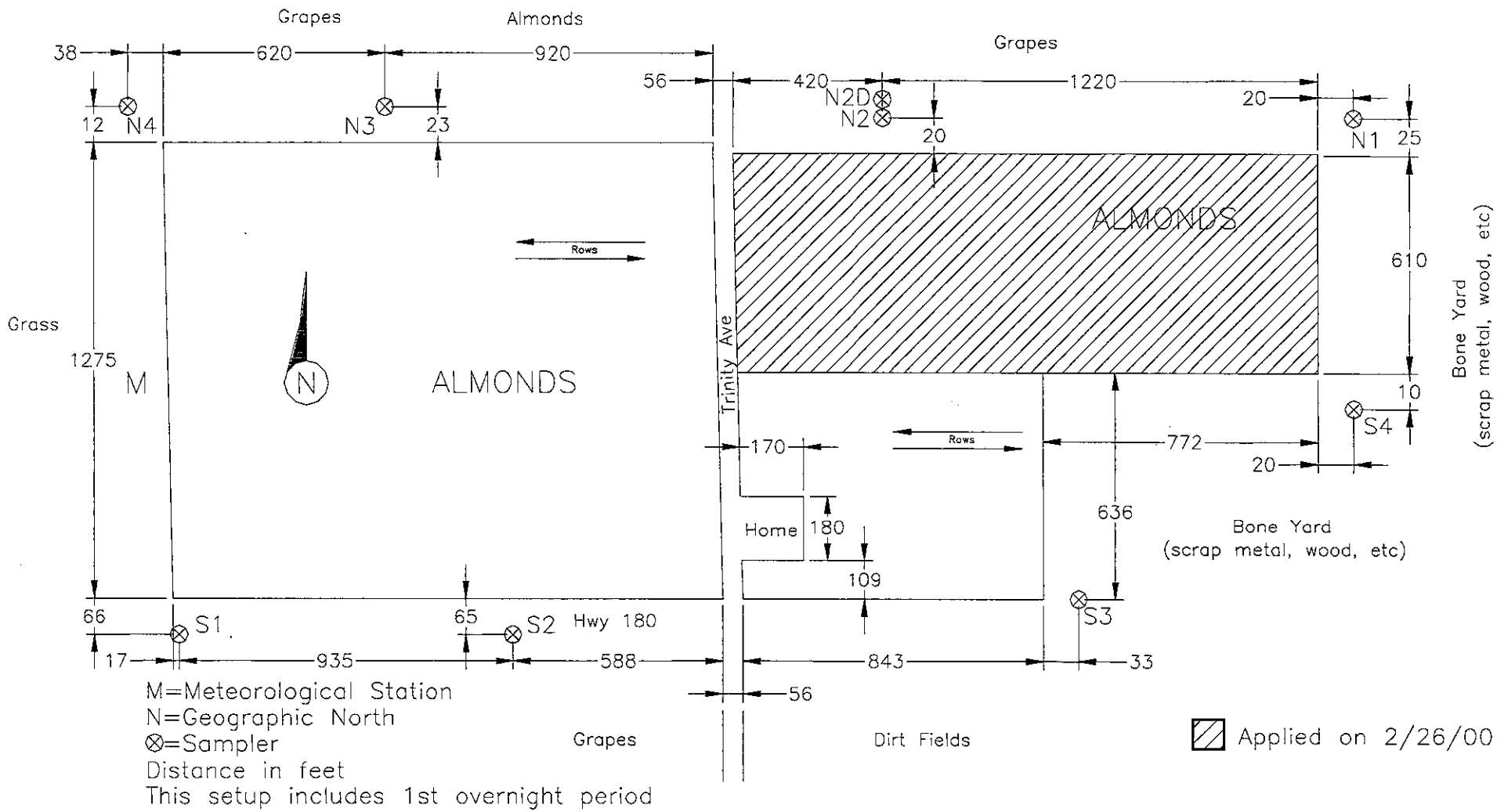


FIGURE 4
2nd Application Sampler Setup



017

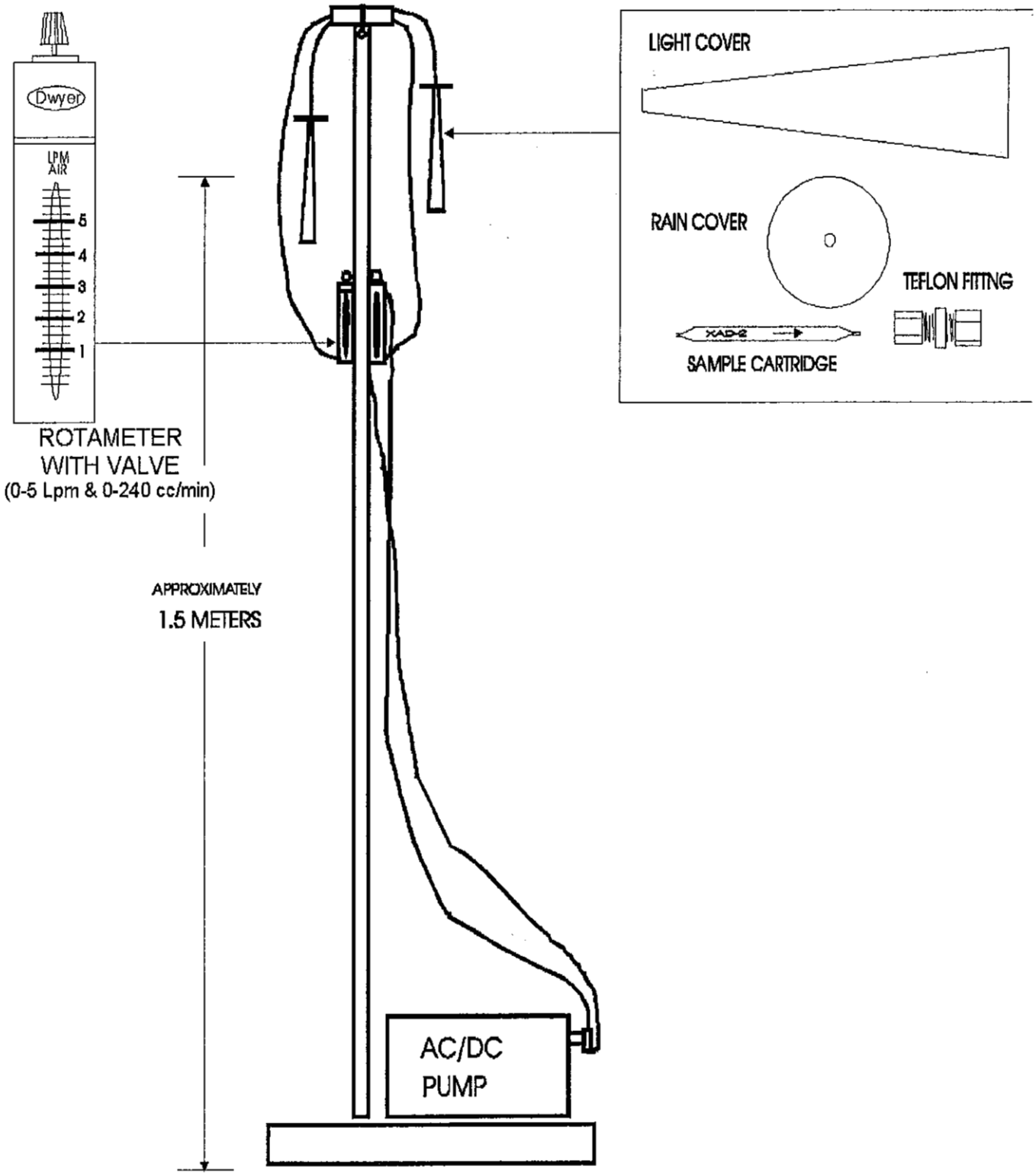
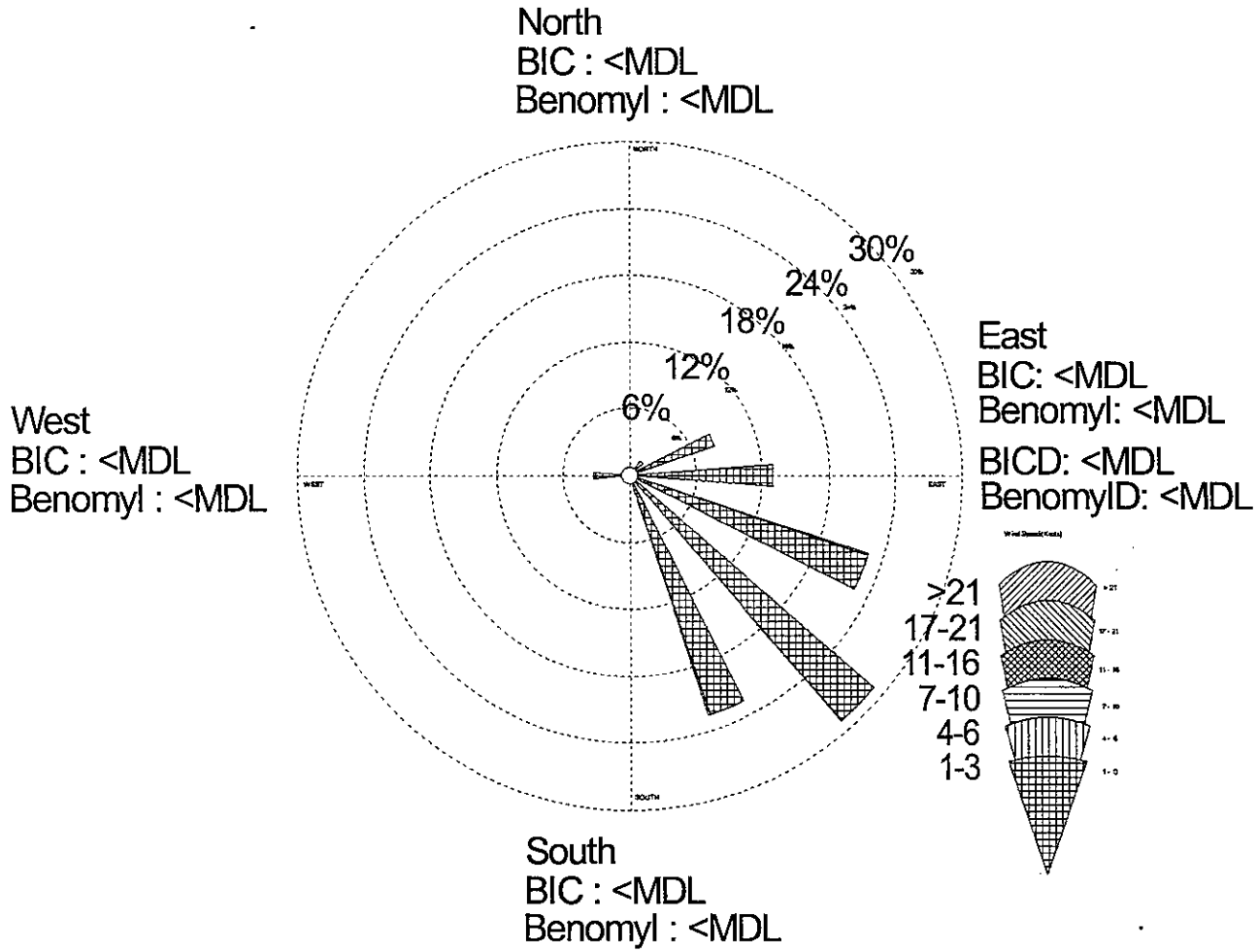


FIGURE 5: SAMPLE TREE WITH TWO ROTAMETERS

Figure 6
Benomyl Application Wind Rose Plot and Results (ng/m^3)
Background Period



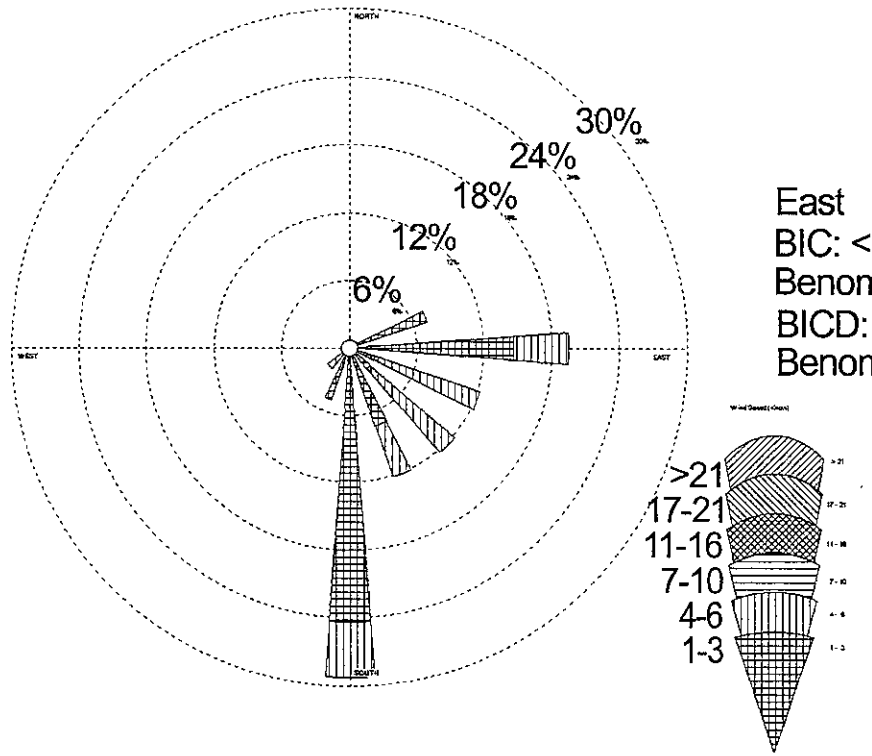
Company Name	Orientation	Avg. Wind Speed	Sample Date-Time
ARB	**Direction (blowing from)**	**2.06 Knots (2.37 mph)**	**2/24/00 1635 to 2/25/00 0805**
Display	Units	Calm Winds	Sample ID
Wind Speed	**Knots**	**0.00%**	**Background Period**

Figure 7
Benomyl Application Wind Rose Plot and Results (ng/m^3)
Period 1

North (N3)
BIC: <MDL
Benomyl: <MDL

North (N2)
BIC: <MDL
Benomyl: 122

North (N1)
BIC: <MDL
Benomyl: <MDL



West
BIC: <MDL
Benomyl: <MDL

East
BIC: <MDL
Benomyl: <MDL
BICD: <MDL
BenomylD: 198

South (S1)
BIC: <MDL
Benomyl: <MDL

South (S2)
BIC: <MDL
Benomyl: <MDL

South (S3)
BIC: <MDL
Benomyl: <MDL

Company Name	Orientation	Avg. Wind Speed	Sample Date-Time
ARB	**Direction (blowing from)**	**3.15 Knots (3.62 mph)**	**2/25/00 0805 to 2/25/00 1825**
Display	Units	Calm Winds	Sample ID
Wind Speed	**Knots**	**0.00%**	**Period 1**

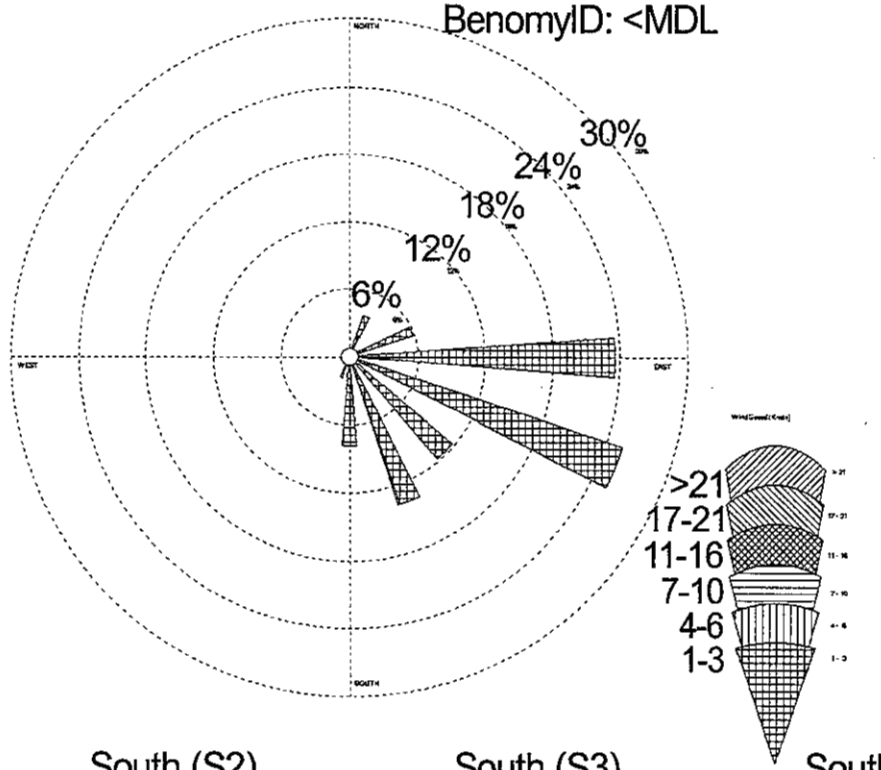
Figure 8
Benomyl Application Wind Rose Plot and Results (ng/m^3)
Period 2

North (N4)
BIC: <MDL
Benomyl: <MDL

North (N3)
BIC: <MDL
Benomyl: <MDL

North (N2)
BIC: <MDL
Benomyl: <MDL
BICD: <MDL
BenomylD: <MDL

North (N1)
BIC: <MDL
Benomyl: <MDL



South (S1)
BIC: <MDL
Benomyl: <MDL

South (S2)
BIC: <MDL
Benomyl: <MDL

South (S3)
BIC: <MDL
Benomyl: <MDL

South (S4)
BIC: <MDL
Benomyl: <MDL

Company Name	Orientation	Avg. Wind Speed	Sample Date-Time
ARB	**Direction (blowing from)**	**2.33 Knots (2.68 mph)**	**2/25/00 1825 to 2/26/00 0700**
Display	Units	Calm Winds	Sample ID
Wind Speed	**Knots**	**5.88%**	**Period 2**

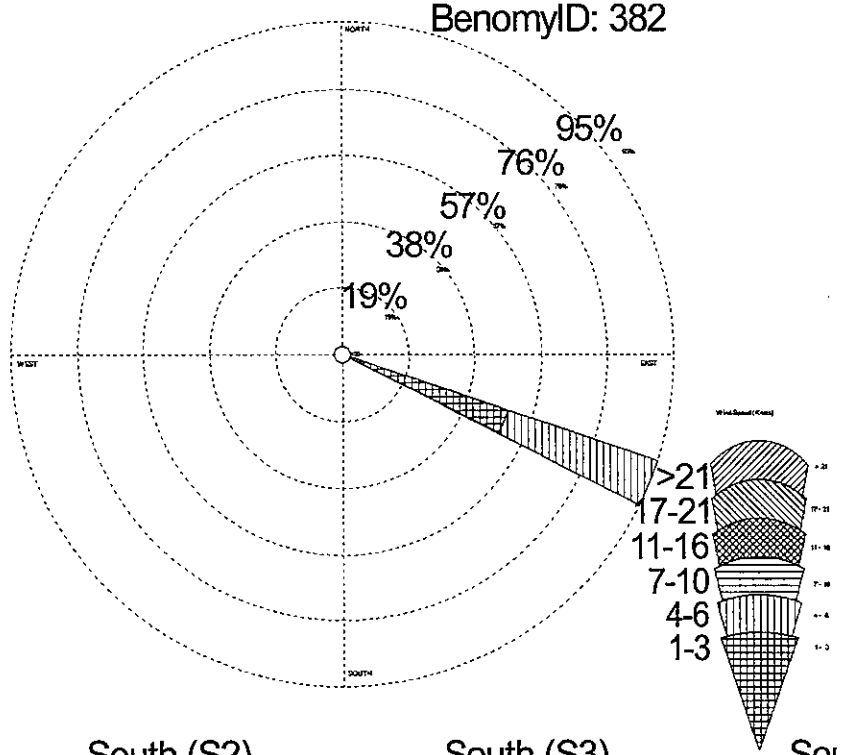
Figure 9
Benomyl Application Wind Rose Plot and Results (ng/m^3)
Period 3

North (N4)
BIC: <MDL
Benomyl: <MDL

North (N3)
BIC: <MDL
Benomyl: <MDL

North (N2)
BIC: <MDL
Benomyl: DET
BICD: <MDL
BenomylD: 382

North (N1)
BIC: <MDL
Benomyl: <MDL



South (S1)
BIC: <MDL
Benomyl: <MDL

South (S2)
BIC: <MDL
Benomyl: <MDL

South (S3)
BIC: <MDL
Benomyl: <MDL

South (S4)
BIC: <MDL
Benomyl: <MDL

Company Name	Orientation	Avg. Wind Speed	Sample Date-Time
ARB	**Direction (blowing from)**	**3.69 Knots (4.25 mph)**	**2/26/00 0700 to 2/26/00 1030**
Display	Units	Calm Winds	Sample ID
Wind Speed	**Knots**	**0.00%**	**Period 3**

022

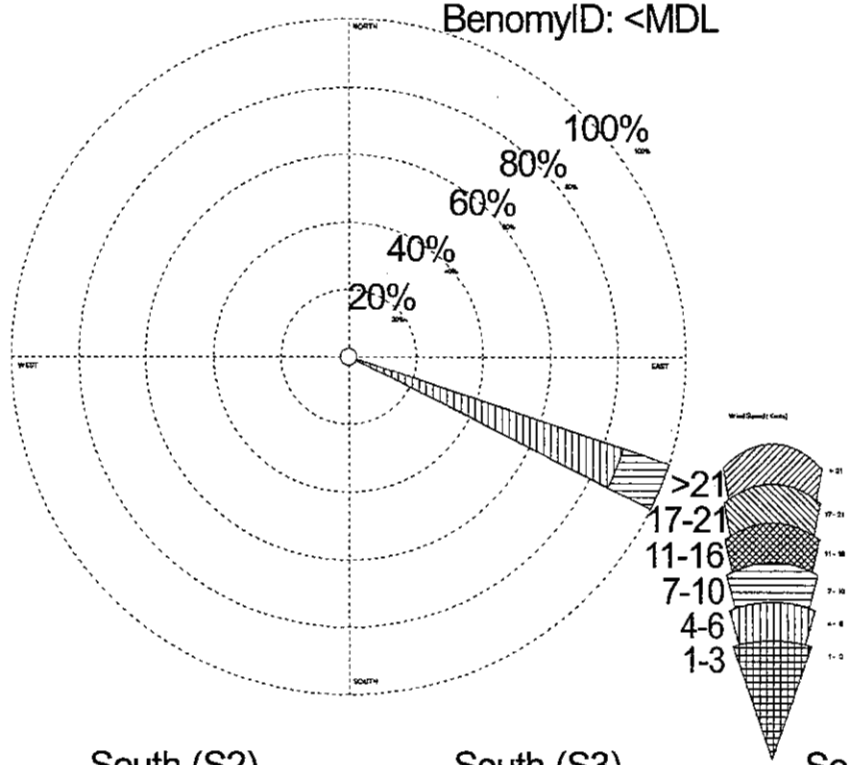
Figure 10
Benomyl Application Wind Rose Plot and Results (ng/m^3)
Period 4

North (N4)
BIC: <MDL
Benomyl: <MDL

North (N3)
BIC: <MDL
Benomyl: <MDL

North (N2)
BIC: <MDL
Benomyl: <MDL
BICD: <MDL
BenomylD: <MDL

North (N1)
BIC: <MDL
Benomyl: <MDL



South (S1)
BIC: <MDL
Benomyl: <MDL

South (S2)
BIC: <MDL
Benomyl: <MDL

South (S3)
BIC: <MDL
Benomyl: <MDL

South (S4)
BIC: <MDL
Benomyl: <MDL

Company Name	Orientation	Avg. Wind Speed	Sample Date-Time
ARB	**Direction (blowing from)**	**5.80 Knots (6.67 mph)**	**2/26/00 1030 to 2/26/00 1130**
Display	Units	Calm Winds	Sample ID
Wind Speed	**Knots**	**0.00%**	**Period 4**

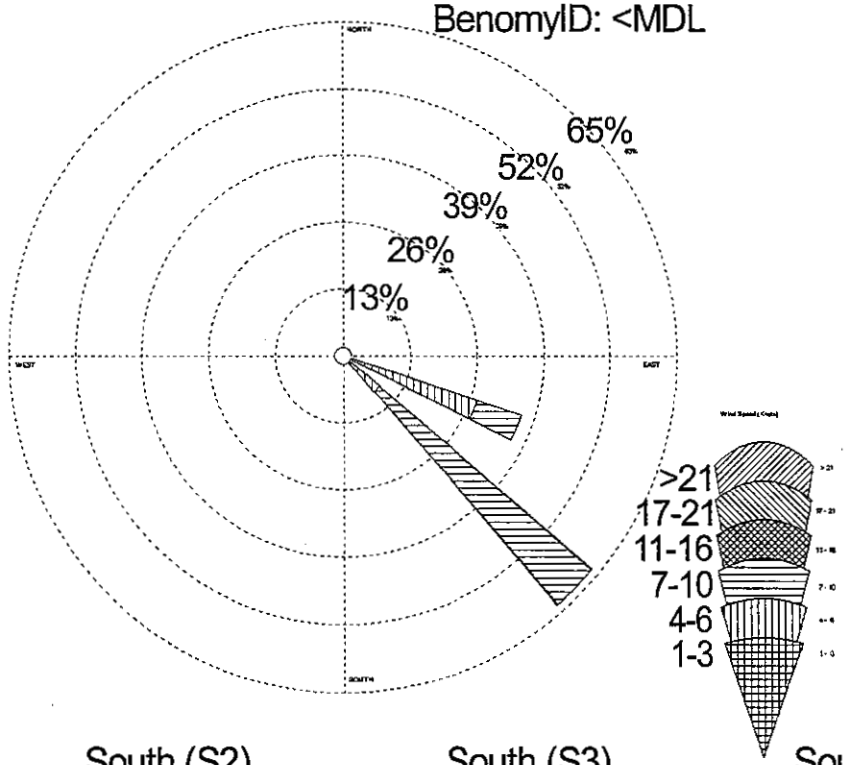
Figure 11
Benomyl Application Wind Rose Plot and Results (ng/m^3)
Period 5

North (N4)
BIC: <MDL
Benomyl: <MDL

North (N3)
BIC: <MDL
Benomyl: <MDL

North (N2)
BIC: <MDL
Benomyl: <MDL
BICD: <MDL
BenomylD: <MDL

North (N1)
BIC: <MDL
Benomyl: <MDL



South (S1)
BIC: <MDL
Benomyl: <MDL

South (S2)
BIC: <MDL
Benomyl: <MDL

South (S3)
BIC: <MDL
Benomyl: <MDL

South (S4)
BIC: <MDL
Benomyl: <MDL

Company Name	Orientation	Avg. Wind Speed	Sample Date-Time
ARB	**Direction (blowing from)**	**6.99 Knots (8.04 mph)**	**2/26/00 1130 to 2/26/00 1330**
Display	Units	Calm Winds	Sample ID
Wind Speed	**Knots**	**0.00%**	**Period 5**

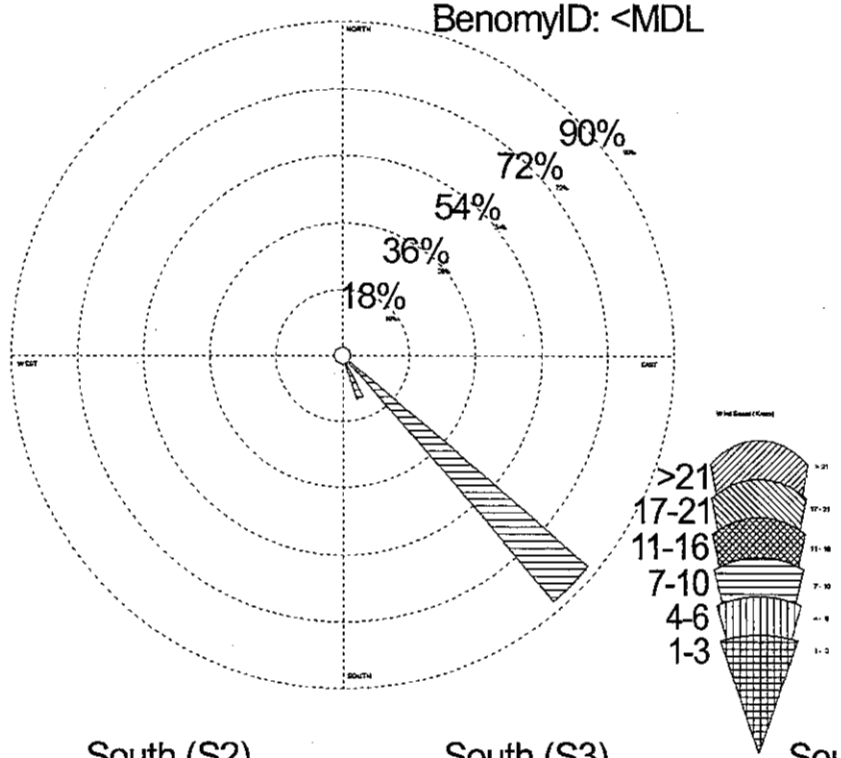
Figure 12
Benomyl Application Wind Rose Plot and Results (ng/m^3)
Period 6

North (N4)
BIC: <MDL
Benomyl: <MDL

North (N3)
BIC: <MDL
Benomyl: <MDL

North (N2)
BIC: <MDL
Benomyl: <MDL
BICD: <MDL
BenomylD: <MDL

North (N1)
BIC: <MDL
Benomyl: <MDL



South (S1)
BIC: <MDL
Benomyl: <MDL

South (S2)
BIC: <MDL
Benomyl: <MDL

South (S3)
BIC: <MDL
Benomyl: <MDL

South (S4)
BIC: <MDL
Benomyl: <MDL

Company Name	Orientation	Avg. Wind Speed	Sample Date-Time
ARB	**Direction (blowing from)**	**7.10 Knots (8.17 mph)**	**2/26/00 1330 to 2/26/00 1645**
Display	Units	Calm Winds	Sample ID
Wind Speed	**Knots**	**0.00%**	**Period 6**

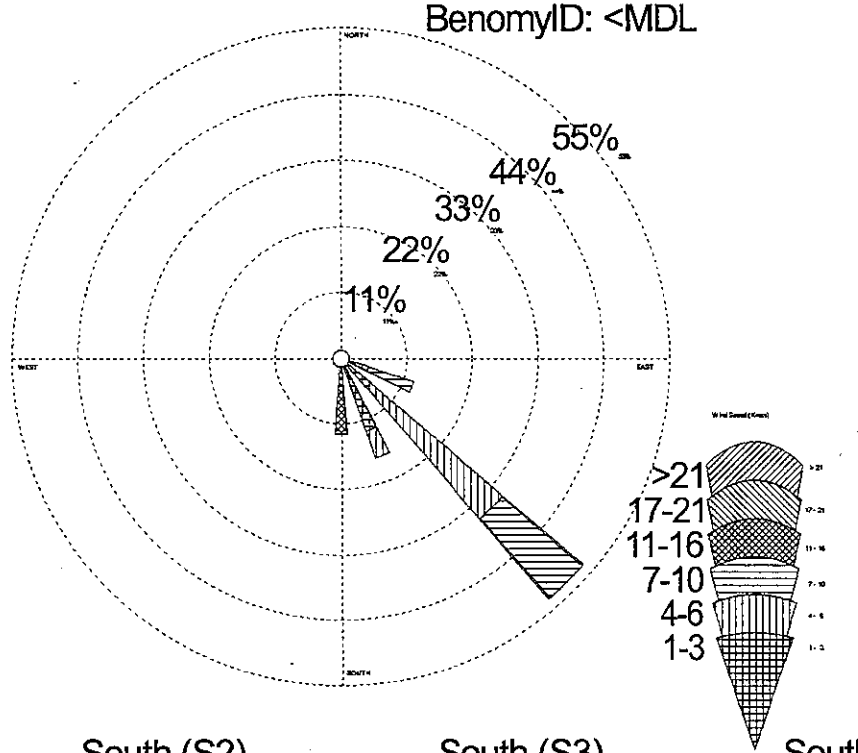
Figure 13
Benomyl Application Wind Rose Plot and Results (ng/m^3)
Period 7

North (N4)
BIC: <MDL
Benomyl: <MDL

North (N3)
BIC: DET
Benomyl: <MDL

North (N2)
BIC: <MDL
Benomyl: 151
BICD: DET
BenomylD: <MDL

North (N1)
BIC: <MDL
Benomyl: <MDL



South (S1)
BIC: <MDL
Benomyl: <MDL

South (S2)
BIC: <MDL
Benomyl: <MDL

South (S3)
BIC: DET
Benomyl: 84.4

South (S4)
BIC: DET
Benomyl: <MDL

Company Name	Orientation	Avg. Wind Speed	Sample Date-Time
ARB	**Direction (blowing from)**	**6.16 Knots (7.09 mph)**	**2/26/00 1645 to 2/27/00 0735**
Display	Units	Calm Winds	Sample ID
Wind Speed	**Knots**	**0.00%**	**Period 7**

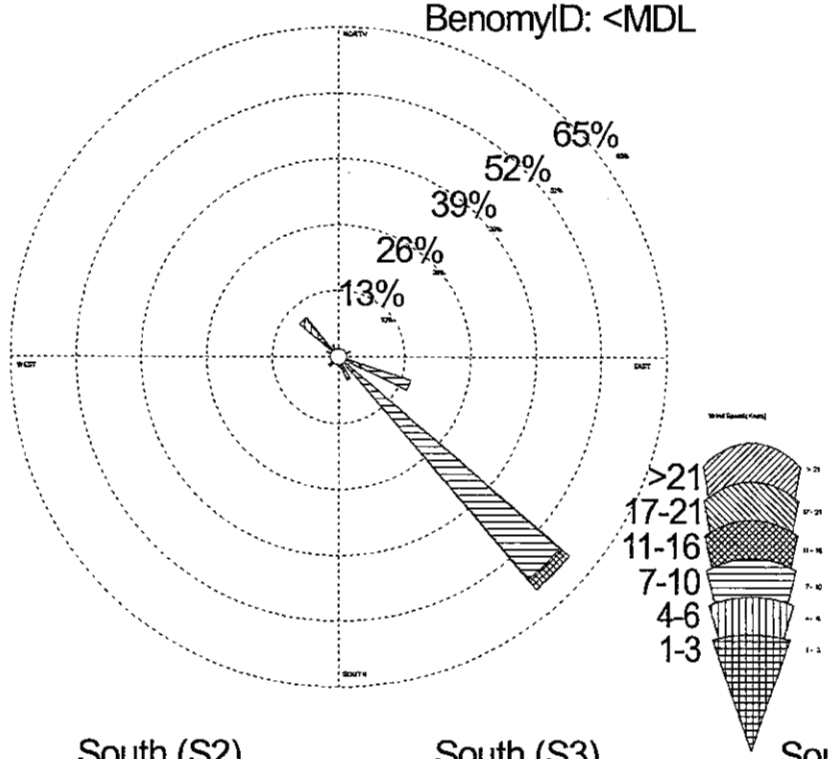
Figure 14
Benomyl Application Wind Rose Plot and Results (ng/m^3)
Period 8

North (N4)
BIC: <MDL
Benomyl: <MDL

North (N3)
BIC: <MDL
Benomyl: DET

North (N2)
BIC: <MDL
Benomyl: <MDL
BICD: <MDL
BenomylD: <MDL

North (N1)
BIC: <MDL
Benomyl: <MDL



South (S1)
BIC: <MDL
Benomyl: <MDL

South (S2)
BIC: <MDL
Benomyl: <MDL

South (S3)
BIC: <MDL
Benomyl: <MDL

South (S4)
BIC: <MDL
Benomyl: <MDL

Company Name	Orientation	Avg. Wind Speed	Sample Date-Time
ARB	**Direction (blowing from)**	**7.33 Knots (8.43 mph)**	**2/27/00 0735 to 2/27/00 1650**
Display	Units	Calm Winds	Sample ID
Wind Speed	**Knots**	**0.00%**	**Period 8**

027

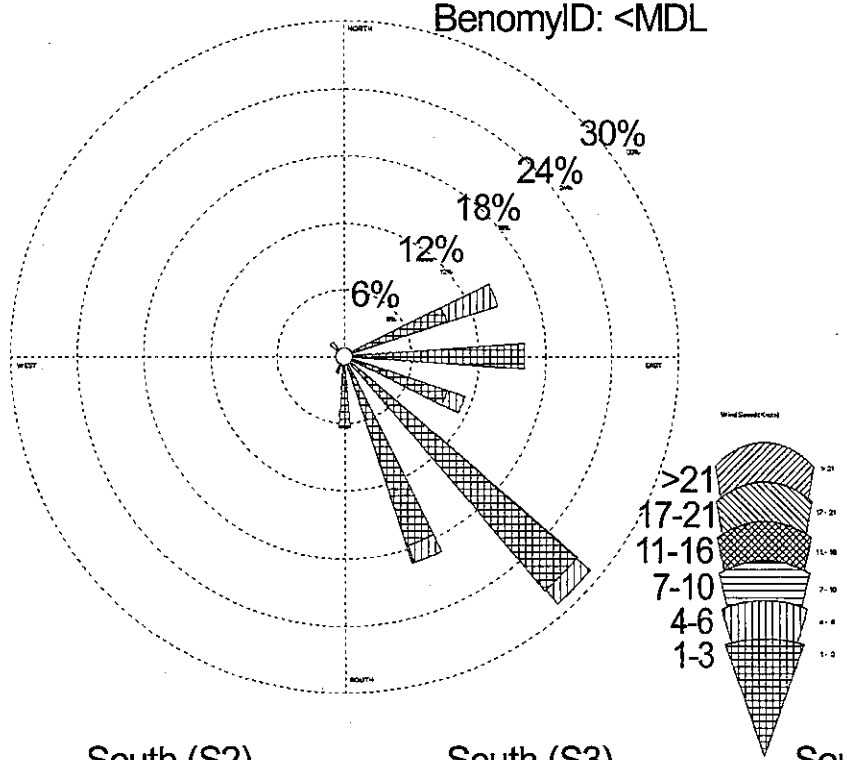
Figure 15
Benomyl Application Wind Rose Plot and Results (ng/m^3)
Period 9

North (N4)
BIC: <MDL
Benomyl: <MDL

North (N3)
BIC: <MDL
Benomyl: <MDL

North (N2)
BIC: DET
Benomyl: <MDL
BICD: DET
BenomylD: <MDL

North (N1)
BIC: <MDL
Benomyl: <MDL



South (S1)
BIC: <MDL
Benomyl: <MDL

South (S2)
BIC: <MDL
Benomyl: <MDL

South (S3)
BIC: <MDL
Benomyl: <MDL

South (S4)
BIC: <MDL
Benomyl: <MDL

Company Name	Orientation	Avg. Wind Speed	Sample Date-Time
ARB	**Direction (blowing from)**	**2.42 Knots (2.78 mph)**	**2/27/00 1650 to 2/28/00 0730**
Display	Units	Calm Winds	Sample ID
Wind Speed	**Knots**	**0.00%**	**Period 9**

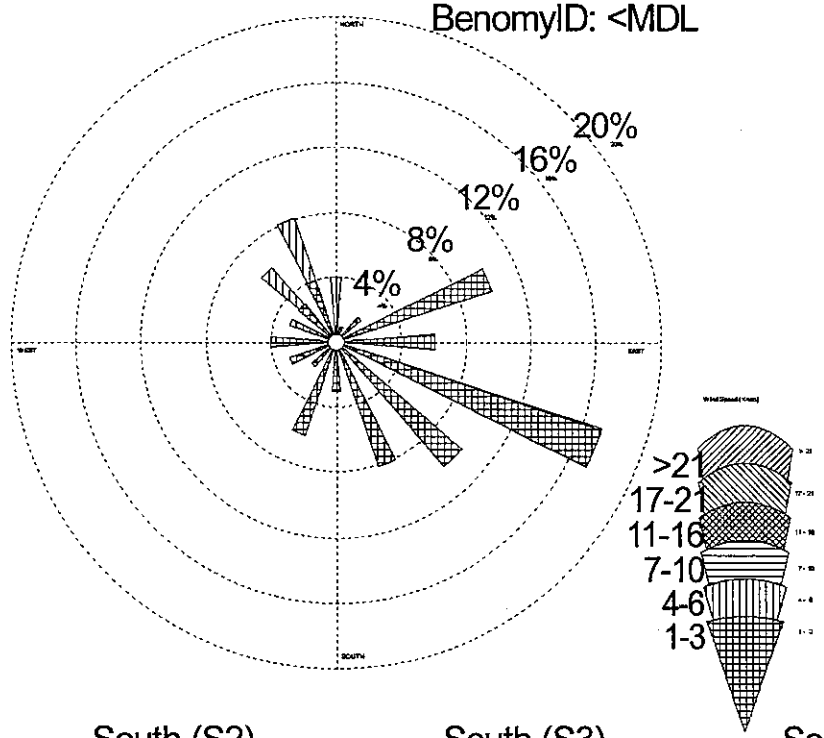
Figure 16
Benomyl Application Wind Rose Plot and Results (ng/m^3)
Period 10

North (N4)
BIC: <MDL
Benomyl: <MDL

North (N3)
BIC: <MDL
Benomyl: <MDL

North (N2)
BIC: <MDL
Benomyl: <MDL
BICD: <MDL
BenomylD: <MDL

North (N1)
BIC: <MDL
Benomyl: <MDL



South (S1)
BIC: <MDL
Benomyl: <MDL

South (S2)
BIC: <MDL
Benomyl: 49.5

South (S3)
BIC: <MDL
Benomyl: DET

South (S4)
BIC: <MDL
Benomyl: DET

Company Name	Orientation	Avg. Wind Speed	Sample Date-Time
ARB	**Direction (blowing from)**	**2.46 Knots (2.83 mph)**	**2/28/00 0730 to 2/29/00 0735**
Display	Units	Calm Winds	Sample ID
Wind Speed	**Knots**	**6.06%**	**Period 10**

029

Table 4. Benomyl Application Monitoring Results

Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	Benomyl (ng/sample)	Benomyl (ng/m^3)	Benomyl *(pptv)
1	BG1WC	02/24/00 1630	02/25/00 0730	900	15.0	2.3	<MDL	<MDL	<MDL
2	BG2NC	02/24/00 1645	02/25/00 0745	900	15.0	2.3	<MDL	<MDL	<MDL
3	BG3EC	02/24/00 1700	02/25/00 0755	895	14.9	2.2	<MDL	<MDL	<MDL
4	BG4SC	02/24/00 1710	02/25/00 0805	895	14.9	2.2	<MDL	<MDL	<MDL
11	CW1	02/25/00 0735	02/25/00 1730	595	9.9	1.5	<MDL	<MDL	<MDL
12	CN21	02/25/00 0745	02/25/00 1740	595	9.9	1.5	1.82E+02	1.22E+02	1.03E+01
13	CE1	02/25/00 0755	02/25/00 1750	595	9.9	1.5	<MDL	<MDL	<MDL
14	CED1	02/25/00 0755	02/25/00 1750	595	9.9	1.4	2.75E+02	1.98E+02	1.67E+01
15	CS31	02/25/00 0820	02/25/00 1755	575	9.6	1.4	<MDL	<MDL	<MDL
16	CS11	02/25/00 0825	02/25/00 1805	580	9.7	1.4	<MDL	<MDL	<MDL
17	CN31	02/25/00 0830	02/25/00 1735	545	9.1	1.4	<MDL	<MDL	<MDL
18	CN11	02/25/00 0835	02/25/00 1745	555	9.3	1.4	<MDL	<MDL	<MDL
19	CS21	02/25/00 0805	02/25/00 1800	595	9.9	1.5	<MDL	<MDL	<MDL
20	CS12	02/25/00 1825	02/26/00 0625	720	12.0	1.8	<MDL	<MDL	<MDL
21	CS22	02/25/00 1830	02/26/00 0630	720	12.0	1.8	<MDL	<MDL	<MDL
22	CS32	02/25/00 1835	02/26/00 0635	720	12.0	1.8	<MDL	<MDL	<MDL
23	CS42	02/25/00 1840	02/26/00 0640	720	12.0	1.8	<MDL	<MDL	<MDL
24	CN12	02/25/00 1845	02/26/00 0645	720	12.0	1.8	<MDL	<MDL	<MDL
25	CN22	02/25/00 1850	02/26/00 0650	720	12.0	1.8	<MDL	<MDL	<MDL
26	CN2D2	02/25/00 1850	02/26/00 0650	720	12.0	1.8	<MDL	<MDL	<MDL
27	CN32	02/25/00 1855	02/26/00 0655	720	12.0	1.8	<MDL	<MDL	<MDL
28	CN42	02/25/00 1900	02/26/00 0700	720	12.0	1.8	<MDL	<MDL	<MDL
29	CS13	02/26/00 0625	02/26/00 1030	245	4.1	0.6	<MDL	<MDL	<MDL
30	CS23	02/26/00 0630	02/26/00 1035	245	4.1	0.6	<MDL	<MDL	<MDL
31	CS33	02/26/00 0635	02/26/00 1040	245	4.1	0.6	<MDL	<MDL	<MDL
32	CS43	02/26/00 0640	02/26/00 1045	245	4.1	0.6	<MDL	<MDL	<MDL
33	CN13	02/26/00 0645	02/26/00 1050	245	4.1	0.6	<MDL	<MDL	<MDL
34	CN23	02/26/00 0650	02/26/00 1055	245	4.1	0.6	DET	DET	DET
35	CN2D3	02/26/00 0650	02/26/00 1055	245	4.1	0.6	2.33E+02	3.82E+02	3.22E+01

MDL = 34 ng/sample
Det = Value was below the EQL of 170 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

Table 4. Benomyl Application Monitoring Results

Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	Benomyl (ng/sample)	Benomyl (ng/m^3)	Benomyl *(pptv)
36	CN33	02/26/00 0655	02/26/00 1100	245	4.1	0.6	<MDL	<MDL	<MDL
37	CN43	02/26/00 0700	02/26/00 1105	245	4.1	0.6	<MDL	<MDL	<MDL
38	CS14	02/26/00 1030	02/26/00 1130	60	1.0	0.1	<MDL	<MDL	<MDL
39	CS24	02/26/00 1035	02/26/00 1135	60	1.0	0.2	<MDL	<MDL	<MDL
40	CS34	02/26/00 1040	02/26/00 1140	60	1.0	0.1	<MDL	<MDL	<MDL
41	CS44	02/26/00 1045	02/26/00 1145	60	1.0	0.2	<MDL	<MDL	<MDL
42	CN14	02/26/00 1050	02/26/00 1150	60	1.0	0.1	<MDL	<MDL	<MDL
43	CN24	02/26/00 1055	02/26/00 1155	60	1.0	0.2	<MDL	<MDL	<MDL
44	CN2D4	02/26/00 1055	02/26/00 1155	60	1.0	0.2	<MDL	<MDL	<MDL
45	CN34	02/26/00 1100	02/26/00 1200	60	1.0	0.1	<MDL	<MDL	<MDL
46	CN44	02/26/00 1105	02/26/00 1205	60	1.0	0.1	<MDL	<MDL	<MDL
47	CS15	02/26/00 1130	02/26/00 1330	120	2.0	0.3	<MDL	<MDL	<MDL
48	CS25	02/26/00 1135	02/26/00 1335	120	2.0	0.3	<MDL	<MDL	<MDL
49	CS35	02/26/00 1140	02/26/00 1340	120	2.0	0.3	<MDL	<MDL	<MDL
50	CS45	02/26/00 1145	02/26/00 1345	120	2.0	0.3	<MDL	<MDL	<MDL
51	CN15	02/26/00 1150	02/26/00 1350	120	2.0	0.3	<MDL	<MDL	<MDL
52	CN25	02/26/00 1155	02/26/00 1355	120	2.0	0.3	<MDL	<MDL	<MDL
53	CN2D5	02/26/00 1155	02/26/00 1355	120	2.0	0.3	<MDL	<MDL	<MDL
54	CN35	02/26/00 1200	02/26/00 1400	120	2.0	0.3	<MDL	<MDL	<MDL
55	CN45	02/26/00 1205	02/26/00 1405	120	2.0	0.3	<MDL	<MDL	<MDL
56	CS16	02/26/00 1330	02/26/00 1645	195	3.2	0.5	<MDL	<MDL	<MDL
57	CS26	02/26/00 1335	02/26/00 1650	195	3.3	0.5	<MDL	<MDL	<MDL
58	CS36	02/26/00 1340	02/26/00 1655	195	3.2	0.5	<MDL	<MDL	<MDL
59	CS46	02/26/00 1345	02/26/00 1700	195	3.3	0.5	<MDL	<MDL	<MDL
60	CN16	02/26/00 1350	02/26/00 1705	195	3.2	0.5	<MDL	<MDL	<MDL
61	CN26	02/26/00 1355	02/26/00 1710	195	3.3	0.5	<MDL	<MDL	<MDL
62	CN2D6	02/26/00 1355	02/26/00 1710	195	3.3	0.5	<MDL	<MDL	<MDL
63	CN36	02/26/00 1400	02/26/00 1715	195	3.2	0.5	<MDL	<MDL	<MDL
64	CN46	02/26/00 1405	02/26/00 1720	195	3.2	0.5	<MDL	<MDL	<MDL

MDL = 34 ng/sample
Det = Value was below the EQL of 170 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

Table 4. Benomyl Application Monitoring Results

Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	Benomyl (ng/sample)	Benomyl (ng/m^3)	Benomyl *(pptv)
65	CS17	02/26/00 1645	02/27/00 0735	890	14.8	2.2	<MDL	<MDL	<MDL
66	CS27	02/26/00 1650	02/27/00 0740	890	14.8	2.2	<MDL	<MDL	<MDL
67	CS37	02/26/00 1655	02/27/00 0745	890	14.8	2.2	1.83E+02	8.44E+01	7.11E+00
68	CS47	02/26/00 1700	02/27/00 0750	890	14.8	2.2	<MDL	<MDL	<MDL
69	CN17	02/26/00 1705	02/27/00 0755	890	14.8	2.2	<MDL	<MDL	<MDL
70	CN27	02/26/00 1710	02/27/00 0800	890	14.8	2.3	3.41E+02	1.51E+02	1.27E+01
71	CN2D7	02/26/00 1710	02/27/00 0800	890	14.8	2.2	<MDL	<MDL	<MDL
72	CN37	02/26/00 1715	02/27/00 0805	890	14.8	2.2	<MDL	<MDL	<MDL
73	CN47	02/26/00 1720	02/27/00 0810	890	14.8	2.2	<MDL	<MDL	<MDL
74	CS18	02/27/00 0735	02/27/00 1650	555	9.3	1.4	<MDL	<MDL	<MDL
75	CS28	02/27/00 0740	02/27/00 1655	555	9.2	1.4	<MDL	<MDL	<MDL
76	CS38	02/27/00 0745	02/27/00 1700	555	9.3	1.4	<MDL	<MDL	<MDL
77	CS48	02/27/00 0750	02/27/00 1705	555	9.2	1.4	<MDL	<MDL	<MDL
78	CN18	02/27/00 0755	02/27/00 1710	555	9.3	1.4	<MDL	<MDL	<MDL
79	CN28	02/27/00 0800	02/27/00 1715	555	9.2	1.4	<MDL	<MDL	<MDL
80	CN2D8	02/27/00 0800	02/27/00 1715	555	9.2	1.4	<MDL	<MDL	<MDL
81	CN38	02/27/00 0805	02/27/00 1720	555	9.2	1.4	DET	DET	DET
82	CN48	02/27/00 0810	02/27/00 1725	555	9.2	1.4	<MDL	<MDL	<MDL
83	CS19	02/27/00 1650	02/28/00 0730	880	14.7	2.2	<MDL	<MDL	<MDL
84	CS29	02/27/00 1655	02/28/00 0735	880	14.7	2.2	<MDL	<MDL	<MDL
85	CS39	02/27/00 1700	02/28/00 0740	880	14.7	2.2	<MDL	<MDL	<MDL
86	CS49	02/27/00 1705	02/28/00 0745	880	14.7	2.2	<MDL	<MDL	<MDL
87	CN19	02/27/00 1710	02/28/00 0750	880	14.7	2.2	<MDL	<MDL	<MDL
88	CN29	02/27/00 1715	02/28/00 0755	880	14.7	2.2	<MDL	<MDL	<MDL
89	CN2D9	02/27/00 1715	02/28/00 0755	880	14.7	2.2	<MDL	<MDL	<MDL
90	CN39	02/27/00 1720	02/28/00 0800	880	14.7	2.2	<MDL	<MDL	<MDL
91	CN49	02/27/00 1725	02/28/00 0805	880	14.7	2.2	<MDL	<MDL	<MDL
92	CS110	02/28/00 0730	02/29/00 0735	1445	24.1	3.6	<MDL	<MDL	<MDL
93	CS210	02/28/00 0735	02/29/00 0740	1445	24.1	3.6	1.78E+02	4.95E+01	4.17E+00

MDL = 34 ng/sample
Det = Value was below the EQL of 170 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

Table 4. Benomyl Application Monitoring Results

Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	Benomyl (ng/sample)	Benomyl (ng/m^3)	Benomyl *(pptv)
94	CS310	02/28/00 0740	02/29/00 0745	1445	24.1	3.6	DET	DET	DET
95	CS410	02/28/00 0745	02/29/00 0750	1445	24.1	3.6	DET	DET	DET
96	CN110	02/28/00 0750	02/29/00 0755	1445	24.1	3.6	<MDL	<MDL	<MDL
97	CN210	02/28/00 0755	02/29/00 0800	1445	24.1	3.6	<MDL	<MDL	<MDL
98	CN2D10	02/28/00 0755	02/29/00 0800	1445	24.1	3.6	<MDL	<MDL	<MDL
99	CN310	02/28/00 0800	02/29/00 0805	1445	24.1	3.6	<MDL	<MDL	<MDL
100	CN410	02/28/00 0805	02/29/00 0810	1445	24.1	3.6	<MDL	<MDL	<MDL

MDL = 34 ng/sample
Det = Value was below the EQL of 170 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

Table 5. Summary of Benomyl Application Results (ng/m^3)

Sampling Period	North	East	South	West					
Background	<MDL	<MDL	<MDL	<MDL					
	S1	S2	S3	West	N1	N2	N3	East	East Collocated
Period 1	<MDL	<MDL	<MDL	<MDL	<MDL	12×10^1	<MDL	<MDL	20×10^1
	S1	S2	S3	S4	N1	N2	N2 Collocated	N3	N4
Period 2	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Period 3	<MDL	<MDL	<MDL	<MDL	<MDL	DET	38×10^1	<MDL	<MDL
Period 4	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Period 5	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Period 6	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Period 7	<MDL	<MDL	84	<MDL	<MDL	15×10^1	<MDL	<MDL	<MDL
Period 8	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	DET	<MDL	<MDL
Period 9	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Period 10	<MDL	49	DET	DET	<MDL	<MDL	<MDL	<MDL	<MDL

Table 6. Benomyl Application Collocated Results (ng/m^3)

Sampling Period	East	East Collocated	Average	*Relative Difference
Period 1	<MDL	20×10^1	NA	NA
	N2	N2 Collocated		
Period 2	<MDL	<MDL	<MDL	NA
Period 3	DET	38×10^1	NA	NA
Period 4	<MDL	<MDL	<MDL	NA
Period 5	<MDL	<MDL	<MDL	NA
Period 6	<MDL	<MDL	<MDL	NA
Period 7	15×10^1	<MDL	NA	NA
Period 8	<MDL	DET	NA	NA
Period 9	<MDL	<MDL	<MDL	NA
Period 10	<MDL	<MDL	<MDL	NA

MDL = 34 ng/sample

DET = Value was below the EQL of 170 ng/sample but > MDL

*Relative Difference = (Diff./Ave.)100

NA = Not Applicable

Table 7. n-Butyl Isocyanate Application Monitoring Results

Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	n-Butyl Isocyanate (ng/sample)	(ng/m^3)	*(pptv)
1	BG1W	02/24/00 1630	02/25/00 0730	900	15.0	0.027	<MDL	<MDL	<MDL
2	BG2N	02/24/00 1645	02/25/00 0745	900	15.0	0.027	<MDL	<MDL	<MDL
3	BG3E	02/24/00 1700	02/25/00 0755	895	14.9	0.027	<MDL	<MDL	<MDL
4	BG4S	02/24/00 1710	02/25/00 0805	895	14.9	0.027	<MDL	<MDL	<MDL
9	BW1	02/25/00 0735	02/25/00 1730	595	9.9	0.018	<MDL	<MDL	<MDL
10	BN21	02/25/00 0745	02/25/00 1740	595	9.9	0.018	<MDL	<MDL	<MDL
11	BE1	02/25/00 0755	02/25/00 1750	595	9.9	0.018	<MDL	<MDL	<MDL
12	BS21	02/25/00 0805	02/25/00 1800	595	9.9	0.018	<MDL	<MDL	<MDL
13	BS31	02/25/00 0820	02/25/00 1755	575	9.6	0.017	<MDL	<MDL	<MDL
14	BS11	02/25/00 0825	02/25/00 1805	580	9.7	0.017	<MDL	<MDL	<MDL
15	BN31	02/25/00 0830	02/25/00 1735	545	9.1	0.016	<MDL	<MDL	<MDL
16	BN11	02/25/00 0835	02/25/00 1745	555	9.3	0.017	<MDL	<MDL	<MDL
17	BED1	02/25/00 0755	02/25/00 1750	595	9.9	0.018	<MDL	<MDL	<MDL
18	BS12	02/25/00 1825	02/26/00 0625	720	12.0	0.022	<MDL	<MDL	<MDL
19	BS22	02/25/00 1830	02/26/00 0630	720	12.0	0.022	<MDL	<MDL	<MDL
20	BS32	02/25/00 1835	02/26/00 0635	720	12.0	0.022	<MDL	<MDL	<MDL
21	BS42	02/25/00 1840	02/26/00 0640	720	12.0	0.022	<MDL	<MDL	<MDL
22	BN12	02/25/00 1845	02/26/00 0645	720	12.0	0.022	<MDL	<MDL	<MDL
23	BN22	02/25/00 1850	02/26/00 0650	720	12.0	0.022	<MDL	<MDL	<MDL
24	BN2D2	02/25/00 1850	02/26/00 0650	720	12.0	0.022	<MDL	<MDL	<MDL
25	BN32	02/25/00 1855	02/26/00 0655	720	12.0	0.022	<MDL	<MDL	<MDL
26	BN42	02/25/00 1900	02/26/00 0700	720	12.0	0.022	<MDL	<MDL	<MDL
27	BS13	02/26/00 0625	02/26/00 1030	245	4.1	0.007	<MDL	<MDL	<MDL
28	BS23	02/26/00 0630	02/26/00 1035	245	4.1	0.007	<MDL	<MDL	<MDL
29	BS33	02/26/00 0635	02/26/00 1040	245	4.1	0.007	<MDL	<MDL	<MDL
30	BS43	02/26/00 0640	02/26/00 1045	245	4.1	0.007	<MDL	<MDL	<MDL
31	BN13	02/26/00 0645	02/26/00 1050	245	4.1	0.007	<MDL	<MDL	<MDL
32	BN23	02/26/00 0650	02/26/00 1055	245	4.1	0.007	<MDL	<MDL	<MDL
33	BN2D3	02/26/00 0650	02/26/00 1055	245	4.1	0.007	<MDL	<MDL	<MDL

MDL = 60 ng/sample
Det = Value was below the EQL of 301 ng/sample sample but ≥MDL
*pptv at 1 atm and 25 C

Table 7. n-Butyl Isocyanate Application Monitoring Results

Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	n-Butyl Isocyanate (ng/sample)	(ng/m^3)	*(pptv)
34	BN33	02/26/00 0655	02/26/00 1100	245	4.1	0.007	<MDL	<MDL	<MDL
35	BN43	02/26/00 0700	02/26/00 1105	245	4.1	0.007	<MDL	<MDL	<MDL
36	BS14	02/26/00 1030	02/26/00 1130	60	1.0	0.002	<MDL	<MDL	<MDL
37	BS24	02/26/00 1035	02/26/00 1135	60	1.0	0.002	<MDL	<MDL	<MDL
38	BS34	02/26/00 1040	02/26/00 1140	60	1.0	0.002	<MDL	<MDL	<MDL
39	BS44	02/26/00 1045	02/26/00 1145	60	1.0	0.002	<MDL	<MDL	<MDL
40	BN14	02/26/00 1050	02/26/00 1150	60	1.0	0.002	<MDL	<MDL	<MDL
41	BN24	02/26/00 1055	02/26/00 1155	60	1.0	0.002	<MDL	<MDL	<MDL
42	BN2D4	02/26/00 1055	02/26/00 1155	60	1.0	0.002	<MDL	<MDL	<MDL
43	BN34	02/26/00 1100	02/26/00 1200	60	1.0	0.002	<MDL	<MDL	<MDL
44	BN44	02/26/00 1105	02/26/00 1205	60	1.0	0.002	<MDL	<MDL	<MDL
45	BS15	02/26/00 1130	02/26/00 1330	120	2.0	0.004	<MDL	<MDL	<MDL
46	BS25	02/26/00 1135	02/26/00 1335	120	2.0	0.004	<MDL	<MDL	<MDL
47	BS35	02/26/00 1140	02/26/00 1340	120	2.0	0.004	<MDL	<MDL	<MDL
48	BS45	02/26/00 1145	02/26/00 1345	120	2.0	0.004	<MDL	<MDL	<MDL
49	BN15	02/26/00 1150	02/26/00 1350	120	2.0	0.004	<MDL	<MDL	<MDL
50	BN25	02/26/00 1155	02/26/00 1355	120	2.0	0.004	<MDL	<MDL	<MDL
51	BN2D5	02/26/00 1155	02/26/00 1355	120	2.0	0.004	<MDL	<MDL	<MDL
52	BN35	02/26/00 1200	02/26/00 1400	120	2.0	0.004	<MDL	<MDL	<MDL
53	BN45	02/26/00 1205	02/26/00 1405	120	2.0	0.004	<MDL	<MDL	<MDL
54	BS16	02/26/00 1330	02/26/00 1645	195	3.2	0.006	<MDL	<MDL	<MDL
55	BS26	02/26/00 1335	02/26/00 1650	195	3.3	0.006	<MDL	<MDL	<MDL
56	BS36	02/26/00 1340	02/26/00 1655	195	3.2	0.006	<MDL	<MDL	<MDL
57	BS46	02/26/00 1345	02/26/00 1700	195	3.3	0.006	<MDL	<MDL	<MDL
58	BN16	02/26/00 1350	02/26/00 1705	195	3.2	0.006	<MDL	<MDL	<MDL
59	BN26	02/26/00 1355	02/26/00 1710	195	3.3	0.006	<MDL	<MDL	<MDL
60	BN2D6	02/26/00 1355	02/26/00 1710	195	3.3	0.006	<MDL	<MDL	<MDL
61	BN36	02/26/00 1400	02/26/00 1715	195	3.2	0.006	<MDL	<MDL	<MDL
62	BN46	02/26/00 1405	02/26/00 1720	195	3.2	0.006	<MDL	<MDL	<MDL

MDL = 60 ng/sample
Det = Value was below the EQL of 301 ng/sample sample but ≥MDL
*pptv at 1 atm and 25 C

Table 7. n-Butyl Isocyanate Application Monitoring Results

Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	n-Butyl Isocyanate (ng/sample)	(ng/m^3)	*(pptv)
63	BS17	02/26/00 1645	02/27/00 0735	890	14.8	0.027	<MDL	<MDL	<MDL
64	BS27	02/26/00 1650	02/27/00 0740	890	14.8	0.027	<MDL	<MDL	<MDL
65	BS37	02/26/00 1655	02/27/00 0745	890	14.8	0.027	DET	DET	DET
66	BS47	02/26/00 1700	02/27/00 0750	890	14.8	0.027	DET	DET	DET
67	BN17	02/26/00 1705	02/27/00 0755	890	14.8	0.027	<MDL	<MDL	<MDL
68	BN27	02/26/00 1710	02/27/00 0800	890	14.8	0.027	<MDL	<MDL	<MDL
69	BN2D7	02/26/00 1710	02/27/00 0800	890	14.8	0.027	DET	DET	DET
70	BN37	02/26/00 1715	02/27/00 0805	890	14.8	0.027	DET	DET	DET
71	BN47	02/26/00 1720	02/27/00 0810	890	14.8	0.027	<MDL	<MDL	<MDL
72	BS18	02/27/00 0735	02/27/00 1650	555	9.3	0.017	<MDL	<MDL	<MDL
73	BS28	02/27/00 0740	02/27/00 1655	555	9.2	0.017	<MDL	<MDL	<MDL
74	BS38	02/27/00 0745	02/27/00 1700	555	9.3	0.017	<MDL	<MDL	<MDL
75	BS48	02/27/00 0750	02/27/00 1705	555	9.2	0.017	<MDL	<MDL	<MDL
76	BN18	02/27/00 0755	02/27/00 1710	555	9.3	0.017	<MDL	<MDL	<MDL
77	BN28	02/27/00 0800	02/27/00 1715	555	9.2	0.017	<MDL	<MDL	<MDL
78	BN2D8	02/27/00 0800	02/27/00 1715	555	9.2	0.017	<MDL	<MDL	<MDL
79	BN38	02/27/00 0805	02/27/00 1720	555	9.2	0.017	<MDL	<MDL	<MDL
80	BN48	02/27/00 0810	02/27/00 1725	555	9.2	0.017	<MDL	<MDL	<MDL
81	BS19	02/27/00 1650	02/28/00 0730	880	14.7	0.026	<MDL	<MDL	<MDL
82	BS29	02/27/00 1655	02/28/00 0735	880	14.7	0.026	<MDL	<MDL	<MDL
83	BS39	02/27/00 1700	02/28/00 0740	880	14.7	0.026	<MDL	<MDL	<MDL
84	BS49	02/27/00 1705	02/28/00 0745	880	14.7	0.026	<MDL	<MDL	<MDL
85	BN19	02/27/00 1710	02/28/00 0750	880	14.7	0.026	<MDL	<MDL	<MDL
86	BN29	02/27/00 1715	02/28/00 0755	880	14.7	0.026	DET	DET	DET
87	BN2D9	02/27/00 1715	02/28/00 0755	880	14.7	0.026	DET	DET	DET
88	BN39	02/27/00 1720	02/28/00 0800	880	14.7	0.026	<MDL	<MDL	<MDL
89	BN49	02/27/00 1725	02/28/00 0805	880	14.7	0.026	<MDL	<MDL	<MDL
90	BS110	02/28/00 0730	02/29/00 0735	1445	24.1	0.043	<MDL	<MDL	<MDL
91	BS210	02/28/00 0735	02/29/00 0740	1445	24.1	0.043	<MDL	<MDL	<MDL

MDL = 60 ng/sample
Det = Value was below the EQL of 301 ng/sample sample but ≥MDL
*pptv at 1 atm and 25 C

Table 7. n-Butyl Isocyanate Application Monitoring Results

Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	n-Butyl Isocyanate (ng/sample)	(ng/m^3)	*(pptv)
92	BS310	02/28/00 0740	02/29/00 0745	1445	24.1	0.043	<MDL	<MDL	<MDL
93	BS410	02/28/00 0745	02/29/00 0750	1445	24.1	0.043	<MDL	<MDL	<MDL
94	BN110	02/28/00 0750	02/29/00 0755	1445	24.1	0.043	<MDL	<MDL	<MDL
95	BN210	02/28/00 0755	02/29/00 0800	1445	24.1	0.043	<MDL	<MDL	<MDL
96	BN2D10	02/28/00 0755	02/29/00 0800	1445	24.1	0.043	<MDL	<MDL	<MDL
97	BN310	02/28/00 0800	02/29/00 0805	1445	24.1	0.043	<MDL	<MDL	<MDL
98	BN410	02/28/00 0805	02/29/00 0810	1445	24.1	0.043	<MDL	<MDL	<MDL

MDL = 60 ng/sample
Det = Value was below the EQL of 301 ng/sample sample but ≥MDL
*pptv at 1 atm and 25 C

Table 8. Summary of n-Butyl Isocyanate Application Results (ng/m^3)

Sampling Period	North	East	South	West					
Background	<MDL	<MDL	<MDL	<MDL					
	S1	S2	S3	West	N1	N2	N3	East	East Collocated
Period 1	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
	S1	S2	S3	S4	N1	N2	N2 Collocated	N3	N4
Period 2	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Period 3	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Period 4	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Period 5	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Period 6	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Period 7	<MDL	<MDL	DET	DET	<MDL	<MDL	DET	DET	<MDL
Period 8	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Period 9	<MDL	<MDL	<MDL	<MDL	<MDL	DET	DET	<MDL	<MDL
Period 10	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL

Table 9. n-Butyl Isocyanate Application Collocated Results (ng/m^3)

Sampling Period	East	East Collocated	Average	*Relative Difference
Period 1	<MDL	<MDL	<MDL	NA
	N2	N2 Collocated		
Period 2	<MDL	<MDL	<MDL	NA
Period 3	<MDL	<MDL	<MDL	NA
Period 4	<MDL	<MDL	<MDL	NA
Period 5	<MDL	<MDL	<MDL	NA
Period 6	<MDL	<MDL	<MDL	NA
Period 7	<MDL	DET	NA	NA
Period 8	<MDL	<MDL	<MDL	NA
Period 9	DET	DET	DET	NA
Period 10	<MDL	<MDL	<MDL	NA

MDL = 60 ng/sample
DET = Value was below the EQL of 301 ng/sample but ≥ MDL
*Relative Difference = (Diff./Ave.)100
NA = Not Applicable

Table 10. Benomyl and n-Butyl Isocyanate Ambient Monitoring Results

Benomyl Log #	BIC Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	Benomyl (ng/sample)	Benomyl (ng/m^3)	Benomyl *(pptv)	Volume (m^3)	N-Butyl Isocyanate (ng/sample)	N-Butyl Isocyanate (ng/m^3)	N-Butyl Isocyanate *(pptv)
1	1	SCH1	01/31/00 1100	02/01/00 1055	1435	23.9	3.4	4.30E+02	1.25E+02	1.05E+01	0.043	<MDL	<MDL	<MDL
2	2	PLA1	01/31/00 1200	02/01/00 1000	1320	22.0	3.2	1.91E+02	6.04E+01	5.09E+00	0.040	<MDL	<MDL	<MDL
3	3	HOW1	01/31/00 1300	02/01/00 1200	1380	23.0	3.5	<MDL	<MDL	<MDL	0.041	<MDL	<MDL	<MDL
4	4	RIV1	01/31/00 1410	02/01/00 1315	1385	23.1	3.4	2.33E+02	6.89E+01	5.81E+00	0.042	<MDL	<MDL	<MDL
5	5	ARB1	01/31/00 1500	02/01/00 1400	1380	23.0	3.5	4.28E+02	1.23E+02	1.04E+01	0.041	<MDL	<MDL	<MDL
9	8	PLA2	02/01/00 1000	02/02/00 1000	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
10	9	SCH2	02/01/00 1055	02/02/00 1045	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
11	10	HOW2	02/01/00 1205	02/02/00 1050	1365	22.8	3.4	<MDL	<MDL	<MDL	0.041	<MDL	<MDL	<MDL
12	11	RIV2	02/01/00 1320	02/02/00 1300	1420	23.7	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
13	12	ARB2	02/01/00 1405	02/02/00 1345	1420	23.7	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
17	15	PLA3	02/02/00 1005	02/03/00 1000	1435	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
18	16	PLA3D	02/02/00 1008	02/03/00 1005	1437	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
19	17	SCH3	02/02/00 1050	02/03/00 1045	1435	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
20	18	SCH3D	02/02/00 1055	02/03/00 1045	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
21	19	HOW3	02/02/00 1155	02/03/00 1150	1435	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
22	20	HOW3D	02/02/00 1158	02/03/00 1150	1432	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
23	21	RIV3	02/02/00 1300	02/03/00 1305	1445	24.1	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
24	22	RIV3D	02/02/00 1305	02/03/00 1305	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
26	24	ARB3	02/02/00 1350	02/03/00 1400	1450	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
27	25	ARB3D	02/02/00 1355	02/03/00 1400	1445	24.1	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
28	26	PLA4	02/03/00 1005	02/04/00 1005	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
29	27	SCH4	02/03/00 1050	02/04/00 1035	1425	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
30	28	HOW4	02/03/00 1155	02/04/00 1135	1420	23.7	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
31	29	RIV4	02/03/00 1310	02/04/00 1000	1250	20.8	3.1	<MDL	<MDL	<MDL	0.037	<MDL	<MDL	<MDL
32	30	ARB4	02/03/00 1405	02/04/00 1225	1340	22.3	3.3	<MDL	<MDL	<MDL	0.040	<MDL	<MDL	<MDL
33	31	ARB5	02/07/00 0900	02/08/00 0900	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
34	32	PLA5	02/07/00 1000	02/08/00 1010	1450	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
35	33	SCH5	02/07/00 1040	02/08/00 1045	1445	24.1	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
36	34	HOW5	02/07/00 1135	02/08/00 1145	1450	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
37	35	RIV5	02/07/00 1245	02/08/00 1245	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
38	36	ARB6	02/08/00 0905	02/09/00 0915	1450	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
39	37	PLA6	02/08/00 1015	02/09/00 1030	1455	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
40	38	SCH6	02/08/00 1050	02/09/00 1110	1460	24.3	3.7	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
41	39	HOW6	02/08/00 1150	02/09/00 1215	1465	24.4	3.7	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
42	40	RIV6	02/08/00 1250	02/09/00 1325	1475	24.6	3.7	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL

MDL = 34 ng/sample for Benomyl
Det = Value was below the EQL of 170 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

MDL = 60 ng/samplefor n-Butyl Isocyanate
Det = Value was below the EQL of 301 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

Table 10. Benomyl and n-Butyl Isocyanate Ambient Monitoring Results

Benomyl Log #	BIC Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	Benomyl (ng/sample)	Benomyl (ng/m^3)	Benomyl *(pptv)	Volume (m^3)	N-Butyl Isocyanate (ng/sample)	N-Butyl Isocyanate (ng/m^3)	N-Butyl Isocyanate *(pptv)
43	41	ARB7	02/09/00 0920	02/10/00 0905	1425	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
44	42	ARB7D	02/09/00 0923	02/10/00 0905	1422	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
45	43	PLA7	02/09/00 1035	02/10/00 1020	1425	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
46	44	PLA7D	02/09/00 1038	02/10/00 1020	1422	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
47	45	SCH7	02/09/00 1115	02/10/00 1100	1425	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
48	46	SCH7D	02/09/00 1120	02/10/00 1100	1420	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
49	47	HOW7	02/09/00 1215	02/10/00 1205	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
50	48	HOW7D	02/09/00 1218	02/10/00 1210	1432	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
51	49	RIV7	02/09/00 1330	02/10/00 1310	1420	23.7	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
52	50	RIV7D	02/09/00 1330	02/10/00 1313	1423	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
53	51	ARB8	02/10/00 0913	02/11/00 0915	1442	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
56	52	PLA8	02/10/00 1030	02/11/00 1015	1425	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
57	53	SCH8	02/10/00 1105	02/11/00 1050	1425	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
59	54	HOW8	02/10/00 1213	02/11/00 1145	1412	23.5	3.5	<MDL	<MDL	<MDL	0.042	<MDL	<MDL	<MDL
60	55	RIV8	02/10/00 1317	02/11/00 1255	1418	23.6	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
62	57	ARB9	02/14/00 0930	02/15/00 0910	1420	23.7	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
63	58	PLA9	02/14/00 1020	02/15/00 1015	1435	23.9	3.6	NA	NA	NA	0.043	<MDL	<MDL	<MDL
64	59	SCH9	02/14/00 1045	02/15/00 1055	1450	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
65	60	HOW9	02/14/00 1200	02/15/00 1200	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
66	61	RIV9	02/14/00 1300	02/15/00 1315	1455	24.3	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
67	62	ARB10	02/15/00 0910	02/16/00 0910	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
68	63	PLA10	02/15/00 1020	02/16/00 1025	1445	24.1	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
69	64	SCH10	02/15/00 1100	02/16/00 1105	1445	24.1	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
70	65	HOW10	02/15/00 1200	02/16/00 1200	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
71	66	RIV10	02/15/00 1315	02/16/00 1310	1435	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
72	67	ARB11	02/16/00 0915	02/17/00 0905	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
73	68	ARB11D	02/16/00 0915	02/17/00 0905	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
74	69	PLA11	02/16/00 1030	02/17/00 1010	1420	23.7	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
75	70	PLA11D	02/16/00 1033	02/17/00 1010	1417	23.6	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
76	71	SCH11	02/16/00 1100	02/17/00 1050	1430	23.8	3.4	2.54E+02	7.37E+01	6.21E+00	0.043	<MDL	<MDL	<MDL
77	72	SCH11D	02/16/00 1100	02/17/00 1050	1430	23.8	3.5	4.24E+02	1.20E+02	1.01E+01	0.043	<MDL	<MDL	<MDL
78	73	HOW11	02/16/00 1205	02/17/00 1155	1430	23.8	3.0	3.66E+02	1.20E+02	1.01E+01	0.043	<MDL	<MDL	<MDL
79	74	HOW11D	02/16/00 1205	02/17/00 1155	1430	23.8	3.6	4.28E+02	1.20E+02	1.01E+01	0.043	<MDL	<MDL	<MDL
80	75	RIV11	02/16/00 1315	02/17/00 1300	1425	23.7	3.6	3.40E+02	9.43E+01	7.94E+00	0.043	<MDL	<MDL	<MDL
81	76	RIV11D	02/16/00 1315	02/17/00 1300	1425	23.7	3.6	1.74E+02	4.88E+01	4.11E+00	0.043	<MDL	<MDL	<MDL

MDL = 34 ng/sample for Benomyl
Det = Value was below the EQL of 170 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

MDL = 60 ng/samplefor n-Butyl Isocyanate
Det = Value was below the EQL of 301 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

Table 10. Benomyl and n-Butyl Isocyanate Ambient Monitoring Results

Benomyl Log #	BIC Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	Benomyl (ng/sample)	Benomyl (ng/m^3)	Benomyl *(pptv)	Volume (m^3)	N-Butyl Isocyanate (ng/sample)	N-Butyl Isocyanate (ng/m^3)	N-Butyl Isocyanate *(pptv)
82	77	ARB12	02/17/00 0910	02/18/00 0905	1435	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
83	78	PLA12	02/17/00 1015	02/18/00 1010	1435	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
84	79	SCH12	02/17/00 1100	02/18/00 1045	1425	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
85	80	HOW12	02/17/00 1200	02/18/00 1140	1420	23.7	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
86	81	RIV12	02/17/00 1310	02/18/00 1240	1410	23.5	3.5	<MDL	<MDL	<MDL	0.042	<MDL	<MDL	<MDL
88	83	ARB13	02/21/00 0915	02/22/00 0915	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
89	84	PLA13	02/21/00 1015	02/22/00 1015	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
90	85	SCH13	02/21/00 1045	02/22/00 1045	1440	24.0	3.6	DET	DET	DET	0.043	<MDL	<MDL	<MDL
91	86	HOW13	02/21/00 1145	02/22/00 1145	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
92	87	RIV13	02/21/00 1240	02/22/00 1245	1445	24.1	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
93	88	ARB14	02/22/00 0918	02/23/00 0910	1432	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
94	89	PLA14	02/22/00 1018	02/23/00 1015	1437	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
95	90	SCH14	02/22/00 1049	02/23/00 1053	1444	24.1	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
96	91	HOW14	02/22/00 1150	02/23/00 1155	1445	24.1	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
97	92	RIV14	02/22/00 1250	02/23/00 1300	1450	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
98	93	ARB15	02/23/00 0910	02/24/00 0905	1435	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
99	94	ARB15D	02/23/00 0910	02/24/00 0905	1435	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
100	95	PLA15	02/23/00 1018	02/24/00 1010	1432	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
101	96	PLA15D	02/23/00 1020	02/24/00 1010	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
102	97	SCH15	02/23/00 1055	02/24/00 1045	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
103	98	SCH15D	02/23/00 1055	02/24/00 1045	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
104	99	HOW15	02/23/00 1200	02/24/00 1145	1425	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
105	100	HOW15D	02/23/00 1200	02/24/00 1145	1425	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
106	101	RIV15	02/23/00 1305	02/24/00 1245	1420	23.7	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
107	102	RIV15D	02/23/00 1305	02/24/00 1245	1420	23.7	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
108	103	ARB16	02/24/00 0910	02/25/00 0905	1435	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
109	104	PLA16	02/24/00 1015	02/25/00 1000	1425	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
110	105	SCH16	02/24/00 1049	02/25/00 1035	1426	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
111	106	HOW16	02/24/00 1150	02/25/00 1130	1420	23.7	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
112	107	RIV16	02/24/00 1248	02/25/00 1230	1422	23.7	3.6	1.78E+02	4.88E+01	4.11E+00	0.043	<MDL	<MDL	<MDL
114	109	ARB17	02/28/00 0905	02/29/00 0910	1445	24.1	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
115	110	PLA17	02/28/00 1000	02/29/00 1020	1460	24.3	3.7	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
116	111	SCH17	02/28/00 1035	02/29/00 1055	1460	24.3	3.7	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
117	112	HOW17	02/28/00 1135	02/29/00 1155	1460	24.3	3.7	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
118	113	RIV17	02/28/00 1230	02/29/00 1300	1470	24.5	3.7	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL

MDL = 34 ng/sample for Benomyl
Det = Value was below the EQL of 170 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

MDL = 60 ng/samplefor n-Butyl Isocyanate
Det = Value was below the EQL of 301 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

Table 10. Benomyl and n-Butyl Isocyanate Ambient Monitoring Results

Benomyl Log #	BIC Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	Benomyl (ng/sample)	Benomyl (ng/m^3)	Benomyl *(pptv)	Volume (m^3)	N-Butyl Isocyanate (ng/sample)	N-Butyl Isocyanate (ng/m^3)	N-Butyl Isocyanate *(pptv)
119	114	ARB18	02/29/00 0915	03/01/00 0910	1435	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
120	115	PLA18	02/29/00 1023	03/01/00 1010	1427	23.8	3.6	DET	DET	DET	0.043	<MDL	<MDL	<MDL
121	116	SCH18	02/29/00 1055	03/01/00 1042	1427	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
122	117	HOW18	02/29/00 1200	03/01/00 1142	1422	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
123	118	RIV18	02/29/00 1303	03/01/00 1240	1417	23.6	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
124	119	ARB19	03/01/00 0915	03/02/00 0905	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
125	120	ARB19D	03/01/00 0915	03/02/00 0905	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
126	121	PLA19	03/01/00 1015	03/02/00 1020	1445	24.1	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
127	122	PLA19D	03/01/00 1045	03/02/00 1020	1415	23.6	3.5	<MDL	<MDL	<MDL	0.042	<MDL	<MDL	<MDL
128	123	SCH19	03/01/00 1045	03/02/00 1055	1450	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
129	124	SCH19D	03/01/00 1045	03/02/00 1055	1450	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
130	125	HOW19	03/01/00 1145	03/02/00 1200	1455	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
131	126	HOW19D	03/01/00 1243	03/02/00 1200	1397	23.3	3.5	<MDL	<MDL	<MDL	0.042	<MDL	<MDL	<MDL
132	127	RIV19	03/01/00 1243	03/02/00 1300	1457	24.3	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
133	128	RIV19D	03/01/00 1243	03/02/00 1300	1457	24.3	3.6	<MDL	<MDL	<MDL	0.044	NA	NA	NA
134	129	ARB20	03/02/00 0910	03/03/00 0910	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
135	130	PLA20	03/02/00 1023	03/03/00 1005	1422	23.7	3.6	DET	DET	DET	0.043	<MDL	<MDL	<MDL
136	131	SCH20	03/02/00 1100	03/03/00 1035	1415	23.6	3.5	<MDL	<MDL	<MDL	0.042	<MDL	<MDL	<MDL
137	132	HOW20	03/02/00 1200	03/03/00 1130	1410	23.5	3.5	<MDL	<MDL	<MDL	0.042	<MDL	<MDL	<MDL
139	133	RIV20	03/02/00 1303	03/03/00 1245	1422	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
140	135	ARB21	03/06/00 0910	03/07/00 0905	1435	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
141	136	PLA21	03/06/00 1015	03/07/00 1000	1425	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
142	137	SCH21	03/06/00 1045	03/07/00 1030	1425	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
143	138	HOW21	03/06/00 1145	03/07/00 1130	1425	23.7	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
144	139	RIV21	03/06/00 1250	03/07/00 1250	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
145	140	ARB22	03/07/00 0910	03/08/00 0910	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
146	141	PLA22	03/07/00 1005	03/08/00 1005	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
147	142	SCH22	03/07/00 1035	03/08/00 1045	1450	24.2	3.6	<MDL	<MDL	<MDL	0.044	NA	NA	NA
148	143	HOW22	03/07/00 1135	03/08/00 1150	1455	24.2	3.6	DET	DET	DET	0.044	<MDL	<MDL	<MDL
149	144	RIV22	03/07/00 1255	03/08/00 1255	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
150	145	ARB23	03/08/00 0913	03/09/00 0910	1437	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
151	146	ARB23D	03/08/00 0913	03/09/00 0910	1437	24.0	3.6	DET	DET	DET	0.043	<MDL	<MDL	<MDL
152	147	PLA23	03/08/00 1010	03/09/00 1010	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
153	148	PLA23D	03/08/00 1010	03/09/00 1010	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
154	149	SCH23	03/08/00 1048	03/09/00 1040	1432	23.9	3.6	DET	DET	DET	0.043	<MDL	<MDL	<MDL

MDL = 34 ng/sample for Benomyl
Det = Value was below the EQL of 170 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

35 33

MDL = 60 ng/samplefor n-Butyl Isocyanate
Det = Value was below the EQL of 301 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

Table 10. Benomyl and n-Butyl Isocyanate Ambient Monitoring Results

Benomyl Log #	BIC Log #	Sample ID	Start Date/Time	End Date/Time	Time (min)	Time (hours)	Volume (m^3)	Benomyl (ng/sample)	Benomyl (ng/m^3)	Benomyl *(pptv)	Volume (m^3)	N-Butyl Isocyanate (ng/sample)	N-Butyl Isocyanate (ng/m^3)	N-Butyl Isocyanate *(pptv)
155	150	SCH23D	03/08/00 1048	03/09/00 1040	1432	23.9	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
156	151	HOW23	03/08/00 1155	03/09/00 1155	1440	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
157	152	HOW23D	03/08/00 1155	03/09/00 1200	1445	24.1	3.6	DET	DET	DET	0.043	<MDL	<MDL	<MDL
158	153	RIV23	03/08/00 1300	03/09/00 1310	1450	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
159	154	RIV23D	03/08/00 1300	03/09/00 1310	1450	24.2	3.6	<MDL	<MDL	<MDL	0.044	<MDL	<MDL	<MDL
160	155	ARB24	03/09/00 0915	03/10/00 0905	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
161	156	PLA24	03/09/00 1015	03/10/00 1005	1430	23.8	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
162	157	SCH24	03/09/00 1043	03/10/00 1040	1437	24.0	3.6	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
163	158	HOW24	03/09/00 1200	03/10/00 1140	1420	23.7	3.5	<MDL	<MDL	<MDL	0.043	<MDL	<MDL	<MDL
164	159	RIV24	03/09/00 1315	03/10/00 1235	1400	23.3	3.5	<MDL	<MDL	<MDL	0.042	<MDL	<MDL	<MDL

MDL = 34 ng/sample for Benomyl
Det = Value was below the EQL of 170 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

MDL = 60 ng/samplefor n-Butyl Isocyanate
Det = Value was below the EQL of 301 ng/sample but ≥MDL
*pptv at 1 atm and 25 C

Table 11. Summary of Benomyl and n-Butyl Isocyanate Ambient Results

Start Date	Benomyl (ng/m^3)					n-Butyl Isocyanate (μg/m^3)				
	ARB	HOW	PLA	RIV	SCH	ARB	HOW	PLA	RIV	SCH
01/31/00	*	<MDL	*	*	*	<MDL	<MDL	<MDL	<MDL	<MDL
02/01/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/02/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/03/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/07/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/08/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/09/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/10/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/14/00	<MDL	<MDL	NA	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/15/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/16/00	<MDL	*	<MDL	*	*	<MDL	<MDL	<MDL	<MDL	<MDL
02/17/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/21/00	<MDL	<MDL	<MDL	<MDL	DET	<MDL	<MDL	<MDL	<MDL	<MDL
02/22/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/23/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/24/00	<MDL	<MDL	<MDL	*	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/28/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
02/29/00	<MDL	<MDL	DET	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
03/01/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
03/02/00	<MDL	<MDL	DET	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
03/06/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
03/07/00	<MDL	DET	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	NA
03/08/00	DET	DET	<MDL	<MDL	DET	<MDL	<MDL	<MDL	<MDL	<MDL
03/09/00	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL

Table 11. Summary of Benomyl and n-Butyl Isocyanate Ambient Results

Start Date	Benomyl (ng/m^3)					n-Butyl Isocyanate (μg/m^3)				
	ARB	HOW	PLA	RIV	SCH	ARB	HOW	PLA	RIV	SCH
Maximum[1]	-	-	-	-	-	<MDL	<MDL	<MDL	<MDL	<MDL
Average[1]	-	-	-	-	-	0.7	0.7	0.7	0.7	0.7
# Samples	24	24	23	24	24	24	24	24	24	23
# >EQL	1	1	1	3	2	0	0	0	0	0
# DET	1	2	2	0	2	0	0	0	0	0
# <MDL	22	21	20	21	20	24	24	24	24	23

Only the higher value of each collocated pair was used to calculate the above statistics.

Benomyl:

* Confirmed as a false positive.

1. There were no samples with confirmed results above the EQL. Samples with "detected" results were not submitted to CDFA for confirmation. Due to these analytical complications the maximum and average results are not listed.

n-Butyl Isocyanate:

MDL = 1.4 μg/m^3 and EQL = 7.0 μg/m^3

"DET" results were factored into the average as (MDL+EQL)/2 = 4.2 μg/m^3.

<MDL results were factored into the average as MDL/2 = 0.7 μg/m^3.

Assume a .043 m^3 sample volume for the above MDL and EQL.

Table 12. Benomyl and n-Butyl Isocyanate Ambient Collocated Results

Sample ID	Benomyl (ng/m^3)	Average	Relative Difference	n-Butyl Isocyanate ($\mu g/m^3$)	Average	Relative Difference
ARB3	<MDL	NA	NA	<MDL	NA	NA
ARB3D	<MDL			<MDL		
ARB7	<MDL	NA	NA	<MDL	NA	NA
ARB7D	<MDL			<MDL		
ARB11	<MDL	NA	NA	<MDL	NA	NA
ARB11D	<MDL			<MDL		
ARB15	<MDL	NA	NA	<MDL	NA	NA
ARB15D	<MDL			<MDL		
ARB19	<MDL	NA	NA	<MDL	NA	NA
ARB19D	<MDL			<MDL		
ARB23	<MDL	NA	NA	<MDL	NA	NA
ARB23D	DET			<MDL		
HOW3	<MDL	NA	NA	<MDL	NA	NA
HOW3D	<MDL			<MDL		
HOW7	<MDL	NA	NA	<MDL	NA	NA
HOW7D	<MDL			<MDL		
HOW11	102*	NA	NA	<MDL	NA	NA
HOW11D	120*			<MDL		
HOW15	<MDL	NA	NA	<MDL	NA	NA
HOW15D	<MDL			<MDL		
HOW19	<MDL	NA	NA	<MDL	NA	NA
HOW19D	<MDL			<MDL		
HOW23	<MDL	NA	NA	<MDL	NA	NA
HOW23D	DET			<MDL		
PLA3	<MDL	NA	NA	<MDL	NA	NA
PLA3D	<MDL			<MDL		
PLA7	<MDL	NA	NA	<MDL	NA	NA
PLA7D	<MDL			<MDL		
PLA11	<MDL	NA	NA	<MDL	NA	NA
PLA11D	<MDL			<MDL		
PLA15	<MDL	NA	NA	<MDL	NA	NA
PLA15D	<MDL			<MDL		
PLA19	<MDL	NA	NA	<MDL	NA	NA
PLA19D	<MDL			<MDL		
PLA23	<MDL	NA	NA	<MDL	NA	NA
PLA23D	<MDL			<MDL		
RIV3	<MDL	NA	NA	<MDL	NA	NA
RIV3D	<MDL			<MDL		
RIV7	<MDL	NA	NA	<MDL	NA	NA
RIV7D	<MDL			<MDL		
RIV11	95*	NA	NA	<MDL	NA	NA
RIV11D	49*			<MDL		
RIV15	<MDL	NA	NA	<MDL	NA	NA
RIV15D	<MDL			<MDL		
RIV19	<MDL	NA	NA	<MDL	NA	NA
RIV19D	<MDL			NA		

Table 12. Benomyl and n-Butyl Isocyanate Ambient Collocated Results

Sample ID	Benomyl (ng/m^3)	Average	Relative Difference	n-Butyl Isocyanate ($\mu g/m^3$)	Average	Relative Difference
RIV23	<MDL	NA	NA	<MDL	NA	NA
RIV23D	<MDL			<MDL		
SCH3	<MDL	NA	NA	<MDL	NA	NA
SCH3D	<MDL			<MDL		
SCH7	<MDL	NA	NA	<MDL	NA	NA
SCH7D	<MDL			<MDL		
SCH11	71*	NA	NA	<MDL	NA	NA
SCH11D	119*			<MDL		
SCH15	<MDL	NA	NA	<MDL	NA	NA
SCH15D	<MDL			<MDL		
SCH19	<MDL	NA	NA	<MDL	NA	NA
SCH19D	<MDL			<MDL		
SCH23	DET	NA	NA	<MDL	NA	NA
SCH23D	<MDL			<MDL		
	Average =		NA	Average =		NA

NA = Not Applicable

*Confirmed as false positives by CDFA LC/MS analysis.

MDL = 9.4 ng/m^3 for Benomyl
Det = Value was below the EQL of 47 ng/m^3 but $\geq$MDL

MDL = 1.4 $\mu g/m^3$ for n-Butyl Isocyanate
Det = Value was below the EQL of 7.0 $\mu g/m^3$ but $\geq$MDL

Table 13. Benomyl *Application Lab* Spike Results

Sample ID	Benomyl Amount (ng)	Expected Amount (ng)	Percent Recovery
LS-1	138	250	55%
LS-2	138	250	55%
LS-3	137	250	55%
LS-4	1683	2000	84%
LS-5	1742	2000	87%
LS-6	1553	2000	78%
		Average =	69%

Table 14. Benomyl *Application Trip* Spike Results

Sample ID	Benomyl Amount (ng)	Expected Amount (ng)	Percent Recovery
TS-1	180	250	72%
TS-2	189	250	76%
TS-3	185	250	74%
TS-4	1574	2000	79%
TS-5	1708	2000	85%
TS-6	1312	2000	66%
		Average =	75%

Table 15. Benomyl *Application Field* Spike Results

Sample ID	Benomyl Amount (ng)	Background* Amount (ng)	Corrected Amount (ng)	Expected Amount (ng)	Percent Recovery
FS-1	1552	<MDL	1552	2000	78%
FS-2	1620	<MDL	1620	2000	81%
FS-3	1436	<MDL	1436	2000	72%
FS-4	208	<MDL	208	250	83%
FS-5	217	<MDL	217	250	87%
FS-6	249	<MDL	249	250	100%
				Average =	83%

*Amount of benomyl found in the collocated background sample.

Table 16. Benomyl *Ambient Lab* Spike Results

Sample ID	Benomyl Amount (ng)	Expected Amount (ng)	Percent Recovery
LS-1	220	250	88%
LS-2	218	250	87%
LS-3	205	250	82%
LS-4	1620	2000	81%
LS-5	1550	2000	78%
LS-6	1590	2000	80%
		Average =	83%

Table 17. Benomyl *Ambient Trip* Spike Results

Sample ID	Benomyl Amount (ng)	Expected Amount (ng)	Percent Recovery
TS-1	253	250	101%
TS-2	236	250	94%
TS-3	211	250	84%
TS-4	1580	2000	79%
TS-5	1560	2000	78%
TS-6	1600	2000	80%
		Average =	86%

Table 18. Benomyl *Ambient Field* Spike Results

Sample ID	Benomyl Amount (ng)	Background* Amount (ng)	Corrected Amount (ng)	Expected Amount (ng)	Percent Recovery
FS-1	332	428	332	250	133%
FS-2	280	428	280	250	112%
FS-3	416	428	416	250	166%
FS-4	1550	<MDL	1550	2000	78%
FS-5	1690	<MDL	1690	2000	85%
FS-6	1710	<MDL	1710	2000	86%
				Average =	110%

*Mass of benomyl found in the collocated ambient sample.

Note:
The result for ARB1 from the ARB analysis was 428 ng/sample. However, a confirmation analysis by LC/MS at CDFA showed this result to be a false positive and the result to actually be <MDL. Thus, the background result was not subtracted from the spike result before calculation of the percent recovery.

Table 19. n-Butyl Isocyanate *Application Lab* Spike Results

Sample ID	n-Butyl Isocyanate Amount (ng)	Expected Amount (ng)	Percent Recovery
LS-1	140	200	70%
LS-2	80	200	40%
LS-3	100	200	50%
LS-4	150	200	75%
		Average =	59%

Table 20. n-Butyl Isocyanate *Application Trip* Spike Results

Sample ID	n-Butyl Isocyanate Amount (ng)	Expected Amount (ng)	Percent Recovery
TS-1	150	200	75%
TS-2	80	200	40%
TS-3	30	200	15%
TS-4	170	200	85%
		Average =	54%

Table 21. n-Butyl Isocyanate *Application Field* Spike Results

Sample ID	n-Butyl Isocyanate Amount (ng)	Background* Amount (ng)	Corrected Amount (ng)	Expected Amount (ng)	Percent Recovery
FS1W	100	<MDL	100	200	50%
FS2W	110	<MDL	110	200	55%
FS3E	110	<MDL	110	200	55%
FS4E	100	<MDL	100	200	50%
				Average =	53%

*Amount of n-Butyl Isocyanate found in the collocated background sample.

Table 22. n-Butyl Isocyanate *Ambient Lab* Spike Results

Sample ID	n-Butyl Isocyanate Amount (ng)	Expected Amount (ng)	Percent Recovery
LS-1	160	200	80%
LS-2	130	200	65%
LS-3	140	200	70%
LS-4	130	200	65%
		Average =	70%

Table 23. n-Butyl Isocyanate *Ambient Trip* Spike Results

Sample ID	n-Butyl Isocyanate Amount (ng)	Expected Amount (ng)	Percent Recovery
TS-1	160	200	80%
TS-2	140	200	70%
TS-3	140	200	70%
TS-4	130	200	65%
		Average =	71%

Table 24. n-Butyl Isocyanate *Ambient Field* Spike Results

Sample ID	n-Butyl Isocyanate Amount (ng)	Background* Amount (ng)	Corrected Amount (ng)	Expected Amount (ng)	Percent Recovery
FS-1	140	<MDL	140	200	70%
FS-2	180	<MDL	180	200	90%
FS-3	180	<MDL	180	200	90%
FS-4	180	<MDL	180	200	90%
				Average =	85%

*Mass of n-Butyl Isocyanate found in the collocated ambient sample.

TABLE 25. ARB AND CDFA RESULTS

Quality Control Samples

Sample #	Sample Name	ARB Results ng/ml	CDFA Results ng/ml	Comments
	XAD-2 resin blank	<MDL	N/F	
	62.5 ng/ml spike	58	68	XAD-2 resin spike
BAP 10	FS6EC	62	39	62.5 ng/ml field spike

Ambient Samples

Sample #	Sample Name	ARB Results ng/ml	CDFA Results ng/ml	Comments
BA 1	SCH1	108	N/F	sample collected 2/8/00
BA 2	PLA1	48	N/F	sample collected 2/8/00
BA 4	RIV1	58	N/F	sample collected 2/8/00
BA 5	ARB1	107	N/F	sample collected 2/8/00
BA 34	PLA5	<MDL*	N/F	
BA 36	HOW5	<MDL*	N/F	
BA 39	PLA6	<MDL*	N/F	
BA 41	HOW6	<MDL*	N/F	
BA 77	SCH11D**	106	N/F	sample collected 2/16/00
BA 78	HOW11	92	N/F	sample collected 2/16/00
BA 79	HOW11D	107	N/F	sample collected 2/16/00
BA80	RIV11	85	N/F	sample collected 2/16/00
BA 81	RIV11D	44	N/F	sample collected 2/16/00
BA 88	ARB13	<MDL*	N/F	
BA 110	SCH16	<MDL*	N/F	
BA 112	RIV16	45	N/F	

Application Samples

Sample #	Sample Name	ARB Results ng/ml	CDFA Results ng/ml	Comments
BAP 12	CN21	46	50	
BAP 14	CED1	54	56	
BAP 17	CN31	<MDL*	N/F	
BAP 35	CN2D3	58	54	
BAP 67	CS37	46	53	
BAP 70	CN27	85	100	
BAP 93	CS210	45	N/F	

N/F - less than 30 ng/ml by CDFA LC/MS method

<MDL - less than 7.4 ng/ml by ARB LC/UV method

* - positive by instrument parameters (RT +/- 0.5 minutes), negative by statistical analysis (RT +/- 2sd)

** - duplicate (SCH11) was submitted to CDFA but quantity was insufficient for LC/MS analysis